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CHANGE PROPOSED BY THE NORTH DAKOTA DEPARTMENT OF HEALTH TO INCREASE ALLOWABLE SULFATE LEVELS IN THE SHEYENNE RIVER

HEARING

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

UNITED STATES SENATE

ONE HUNDRED ELEVENTH CONGRESS

SECOND SESSION

SPECIAL HEARING

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CHANGE PROPOSED BY THE NORTH DAKOTA DEPARTMENT OF HEALTH TO INCREASE ALLOWABLE SULFATE LEVELS IN THE SHEYENNE RIVER

FRIDAY, FEBRUARY 19, 2010

U.S. SENATE,
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT,
COMMITTEE ON APPROPRIATIONS,
West Fargo, ND.

The subcommittee met at 10 a.m., in West Fargo City Commission Chambers, Hon. Byron Dorgan (chairman) presiding.

Present: Senator Dorgan.

OPENING STATEMENT OF SENATOR BYRON L. DORGAN

Senator DORGAN. Ladies and gentlemen, we're going to begin. I'm Senator Byron Dorgan chairman of the Energy and Water and Appropriations Subcommittee. This is a formal hearing of the subcommittee. We'll keep the record open for 2 weeks for anyone who wishes to submit formal comments for the hearing record. You can submit them to my office if you wish.

The purpose of this hearing is to evaluate the change that is proposed by the North Dakota Department of Health to increase the allowable sulfate levels in the Sheyenne River. The State's Devils Lake outlet is scheduled to begin operating at a higher capacity sometime this summer, early summer, and I understand that that is the basis for the Department of Health's position to increase the sulfate levels.

Let me say for the purposes of Devils Lake I support all the efforts that we can make to take water off of the lake as you know. I have funded proposals in the past to take water off for irrigation purposes. I have included, I think, the single largest appropriation that has ever been moved from our subcommittee, exclusive of the hurricane Katrina issues, to the Corps of Engineers some $90 plus million 1 year ago. I included that is now available and now being used to increase the levee at Devils Lake. That is the largest appropriation that I have ever made for one single project.

So the question isn't does the delegation or do I support what is going on in Devils Lake. We have spent years and years raising roads, raising levees, and doing all the things to try to mitigate the flooding in Devils Lake. That includes supporting an outlet and it includes supporting the building of a State outlet.

The question today is, with the proposal to increase the level of the outlet, which I believe will result in taking off somewhere

around 3 to 4 inches from the lake a year if it's operated at what is expected to be the levels expected to operate. The question is, are there consequences to that? If so, what are the consequences? What should we understand about those consequences for others?

It may be there are consequences, and we need to understand what they are in order to make judgments about them. So one of the reasons that I decided finally to hold a hearing is I had delivered to me a petition with some 700 names on it, residents of particularly Valley City but the surrounding region as well, indicating that not enough was known about this. They wanted to understand more.

As I began to look into it, I agree. I don't understand all the consequences of it either. I think all of us need to understand what the risks are, if any. What are the consequences, if any, and that does not diminish our intent and interest in addressing the Devils Lake flooding issue. It is chronic flooding, and we've spent years of the State government and Federal Government working on this. We have spent a massive amount of money working on it, and yet the lake continues to rise.

I have no interest nor would I expect other public officials to have an interest in transferring problems from one region of the State to another region of the State. If that were the case, that would be not be acceptable. I don't know that that's the case, but this hearing will provide us a basis of information with which to judge that.

I want to thank all of you for being here. I know that you have prepared testimony that will be part of the permanent record as well.

What I would like to do is call on the Governor and the health department first. I believe Mayor Walaker has to leave at some point during this hearing, and then we'll have statements from the witnesses. I will ask questions. Following which I will have an open microphone period, and we will ask if you have things you wish to say. Come and state your name and so that we have your name for the record.

Again, I appreciate this opportunity, and I look forward to the testimony.

Governor Hoeven.

STATEMENT OF HON. JOHN HOEVEN, GOVERNOR, STATE OF NORTH DAKOTA

Governor HOEVEN. Senator, thank you, and it is good to be with you and certainly our mayors and everyone here present. We just had a media avail with Mayor Walaker, Mayor Mattern, and Mayor Fred Bott. Mayor Mary Lee Nielson of Valley City is actually on her way to Washington, DC so she wasn't able to join us otherwise would have been present with us as well. I think it really reflects the great joint effort and cooperation between the communities and the State of North Dakota. Because when it comes to water management and flood protection in the Red River Basin, it's very important we're all working together and that's exactly what's going on. And so I also appreciate your help and your support in this effort as you mention your support for the Devils Lake outlet

and its operation. It's much appreciated and so I thank you for that.

Of course, today we're talking about increasing the flows out of the outlet and what I need to emphasize right up front that is very much about protecting the downstream communities on the Sheyenne. It is very much about protecting the downstream communities on the Sheyenne both in terms of water quality and to prevent flooding as much as it is to help with Devils Lake and flooding in the lake region basin. And so we're going to go through that a little bit.

We've got Dave Glatt here who is chief of the Environmental Section from the North Dakota Department of Health. He's going to go through in detail this is another good opportunity to do just what he's been doing, which is holding hearings in and around the basin and Devils Lake and Valley City and other places, not only to provide information but to hear from people as well, so this is an ongoing process both the Federal entities such as yourself and others, the A—U.S. Fish and Wildlife, and there's a long list, which I've included in my comments, but also the State agencies water commission, department of health, to really get information out there so people understand that this is an effort to protect upstream and downstream, and it's a cooperative effort in terms of water quality and flood prevention throughout the Red River Basin.

Of course, what's necessitating increasing the flows out of Devils Lake is the rise in the lake level. Since 1993—and I know you are well aware of much of this, but since 1993 Devils Lake has risen 27 feet, 27 feet. It's now at lake elevation of more than 1,450, and they're talking about another 3 feet this year, and we're only 8 feet from the point where we have an uncontrolled spill out of the east end where we truly have water quality issues and, of course, that would create flooding.

So even building some type of control structure over there still leaves us with the water quality issues. And as I say, we're only 8 feet away with potentially 3 feet of that occurring in the rise this year. So the effort is through the west-end outlet to increase the flows so that we prevent flooding. We don't have water coming out during the spring as now we're very concerned about flooding obviously throughout the basin, so it's both for flood protection and prevention. But then also to make sure that we manage the water quality, for example, its use of sulfates which has been a discussion in something that the health department is working on very carefully.

There is no plan to change the sulfate standard essentially below Valley City or Lake—Baldhill Dam all the way down and through and past Fargo. There's no intent to change that sulfate standard. It would still be the stream standard of 450 milligrams per liter, which is actually better than the Canadian drinking water standard, which is 500 parts—500 milligrams per liter, so even untreated it's better than their drinking water standard.

Making sure we cover all State health department requirements and EPA requirements, but even in addition to that to make sure that everybody's on board and that any and all concerns are addressed where all the State through the water commission is work-

ing with the communities along the Sheyenne to make sure that whatever water treatment plans and preparations they have both now and for the future that we're a partner with them. To have it set the way they want. Example, Valley City is in process of upgrading their water treatment plant because they need more capacity. That's a good thing, Jon Cameron sitting interviews here. He will speak to it. We partnered with them to add reverse osmosis, which will take sulfates out, so they're—actually their water quality will be better than it is now.

Fargo and West Fargo are working together on water treatment options for the Fargo/West Fargo metro area. That's fantastic. I want to commend them for that joint effort. They don't currently draw water from the Sheyenne as their primary source, but they use it as a back-up source, and so as they look at water treatment development, same thing. We're going work—we're going—the State's going work with them to make sure that we partner with them in whatever solution they want be that reverse osmosis or whatever they may want or need to make sure that they have their treatment set the way they want it. And so that's the approach we're taking, but it's the approach we must take.

Same thing with any erosion issues, I know there's been some discussion that the West Fargo diversion if there's more water coming through, more days when the water's coming through could create some erosion issues. We'll work with them to help them rip rap the West Fargo diversion. So really it's a kin to the same kind of work that we're undertaking with permanent flood protection for the region.

This has to be a comprehensive approach. It has to be a basin-wide approach. It has to be a local, State, Federal approach. It's very important. And so I think to the extent we could really again discuss that today and continue to work together as we are that this is useful, and so it's good to be here, and I'll wrap up there.

PREPARED STATEMENT

I know Dave's got some comments and also Mayor Walaker and then, of course, we do want to hear the update from the National Weather Service, which is coming out this morning as well on the flood.

[The statement follows:]

PREPARED STATEMENT OF HON. JOHN HOEVEN

Good morning Senator, good morning mayors, ladies and gentleman.

I appreciate this opportunity to discuss the operation of the Devils Lake Outlet and its importance—not just to the community of Devils Lake and the Devils Lake area, but also to downstream interests.

We have worked hard to provide information to all concerned regarding the operation of the Devils Lake Outlet, and I thank you, Senator Dorgan, for your support of the outlet. Attached to my testimony are three of your letters in support of operating the Devils Lake Outlet.

First and foremost, I want to make clear that the State of North Dakota is committed to protecting the interests of Valley City, Lisbon, west Fargo, Fargo and other communities along the Sheyenne and Red River, as well as Devils Lake.

In fact, operating the Devils Lake Outlet is as important to protecting downstream communities' water quality and preventing downstream flooding, as it is to helping mitigate flooding in the Devils Lake region.

Rather than transferring any problem from one region of our State to another region of our State, operating the Devils Lake Outlet at up to 250 cfs is designed to protect water quality for communities downstream of Devils Lake.

Since 1993, Devils Lake has risen by 27 feet and it is forecasted to set another record high this year.

At a lake elevation of 1,450 feet, it is now only about 8 feet from an overflow out of Stump Lake on the east end.

Such an overflow would initiate a discharge of the poorest quality, highest-sulfate water overland to the Sheyenne River.

Therefore, instead of lower sulfate water at manageable levels, downstream communities—including Valley City, Lisbon, west Fargo, and Fargo—would receive high sulfate water at more than 2,200 milligrams per liter.

The State's objective with the west-end outlet is to minimize or avoid the effects of a discharge from Devils Lake into the Sheyenne that would create problems downstream from either a flooding or water quality standpoint.

We are absolutely committed to working with the downstream communities in that effort, just as we are working to mitigate flooding in the Devils Lake Basin.

Dave Glatt, chief of the State's Environmental Health Division, is here to provide more specifics.

He and our health department have been working with other agencies, including the U.S. Environmental Protection Agency, U.S. Department of State, U.S. Department of the Interior, U.S. Fish and Wildlife Service, the White House Council on Environmental Quality, Canadian officials, and as you know, your office as well, Senator Dorgan, to properly manage operation of the Devils Lake Outlet.

At the local level, officials from the North Dakota Department of Health, the State Water Commission, and the Department of Game and Fish have also provided information to city representatives from Devils Lake, Valley City, Fargo and other communities.

These officials have conducted well-attended public hearings in Devils Lake, Valley City and Bismarck; and, in addition, participated in a local public health board meeting and open public forum in Valley City.

Information on the Devils Lake outlet, moreover, is readily available in great detail on the Department of Health and State Water Commission Web pages.

I also want to underscore that the Outlet is just one part of a three part plan to address Devils Lake flooding. That effort includes mitigation (diking and raising roads); water retention; and the outlet.

In terms of water retention, Devils Lake has grown from less than 50,000 acres to more than 160,000 acres. Clearly there is a huge amount of water in essence stored in the Lake Region—more than 100,000 acres of water.

Also, more than $500 million has been spent by local, State, and Federal entities to mitigate rising waters in the Devils Lake region, including raising roads and diking. An additional $150 million will be spent over the next 18 months.

Certainly, the $90 million you secured recently will help raise dikes around the city of Devils Lake again, but it will not address the issue of an east-end overflow with its downstream impacts. That is why we must increase operation of the outlet in a controlled manner.

To assist in the operation of the Devils Lake outlet, the North Dakota Legislature created a 10-member advisory committee, including State, county, and tribal members.

Its management is not determined by any one individual, but rather to a group of concerned and involved citizens, each representing the interests and concerns of communities throughout the affected region.

These committee members develop an annual operating plan, which considers factors such as spring runoff and flooding potential, as well as downstream impacts on water quality and stream bank erosion.

We did not last year, and we will not, operate while downstream communities are facing flooding.

In addition, the State also continues to conduct complete chemical analyses of Devils Lake and the Sheyenne and Red rivers on a regular schedule to ensure that they comply with all acceptable EPA and State standards.

In regard to sulfates, the stream standard for the Sheyenne River below Baldhill Dam will remain 450 milligrams per liter, as it has always been. The State Water Commissions objective is to keep sulfates on the Sheyenne through downstream communities below that level.

To put that in perspective, at 450 parts per million on the Sheyenne River, our stream sulfate standard at Valley City is in fact better than the Canadian drinking water standard, which is 500 parts per million.

Although the scientific evidence indicates that we are well within acceptable levels, we want communities downstream to be assured of quality municipal water supplies and are doing what we can to help.

To that end, the North Dakota Department of Health and the State Water Commission have been working closely with the community of Valley City, not just to mitigate the possibility of a major flood, but to improve Valley City's water supply system.

To emphasize North Dakota's commitment to Valley City's interests, last summer the State awarded nearly $12 million in direct assistance for a new municipal water supply system.

At present, the city's water is treated by a conventional lime-softening treatment process that does not remove sulfates and minerals.

The new facility, however, will remove sulfates and other dissolved minerals, resulting in significantly higher water quality than the community's existing water treatment plant now provides.

Moreover, the new facility meets not only the city's immediate needs, but also its future needs as a growing North Dakota community.

Similarly, we are committed to operating the outlet in a manner that manages sulfate levels in west Fargo and Fargo at levels well within the acceptable limit established by the EPA and the State of North Dakota.

To that end, we were pleased to learn that Fargo and west Fargo are working together on water treatment for their growing communities, and we will do what we can to help them reach their goals, just as we are doing in Valley City.

If they should need technical or financial assistance with their project, including reverse osmosis technology, we are committed to working with the cities to help. Likewise, we will help if additional rip rap is needed for the west Fargo diversion.

Again, I want to underscore our commitment to protect the interests not only of Devils Lake, but of Valley City, Lisbon, Fargo, west Fargo, and all of our communities along the Sheyenne and Red Rivers.

Working together, there is much we can, and will, accomplish.

Thank you.

Senator DORGAN. Governor, thank you very much. I'm going to call on Mayor Walaker before Mr. Glatt. I believe the mayor has to leave in 10 to 15 minutes. So, Mayor Walaker, thank you for being here.

STATEMENT OF DENNIS WALAKER, MAYOR, CITY OF FARGO

Mayor WALAKER. First of all, it's a privilege to be here, Senator Dorgan. The press conference in the—this coming from National Weather Service and we have to be there by 10:45.

I'm Fargo Mayor Dennis Walaker, and I'd like to thank Senator Dorgan and the city of West Fargo for hosting this subcommittee hearing regarding the Emergency Rule action on the Sheyenne River.

First, I think some background information would be helpful to understand Fargo's position on this matter. The city of Fargo utilizes both the Red and Sheyenne for its municipal water supply. We think having two surface water sources is a good water supply planning and historically, we've utilized them both independently and in combination for a variety of reasons related to water quality. And the Fargo water system presently provides drinking water to the city of Fargo and a significant user, the Cass County Rural Water Users District, serving a total population of approximately 120,000 people.

In addition, we have recently begun discussions with the city of West Fargo to explore the possibility of a regional water supply solution, and it's my understanding that's moving forward. There's a possibility that we could treat water and serve the city of West Fargo and have maybe a process where we could work together that would benefit both cities and that seems to be very important

to us and very important to them because the cost of doing the other part of the process is extremely expensive and basically redundant.

Our water treatment plant was constructed in 1997 with treatment technologies that were selected based on historic water quality in the Red and Sheyenne Rivers. As far back as 1975, the USGS historic water quality data on the Sheyenne River at West Fargo shows an average sulfate concentration around 200 milligrams per liter with an occasional peak of 300. The EPA secondary standard for sulfates in drinking water is 250 milligrams per liter, and the North Dakota Department of Health's recommended upper limit for sulfates in drinking water is also 250 milligrams per liter. So based on historic water quality, it wasn't necessary for our treatment plant to include technologies for sulfate removal. And since the plant began operating in 1997, we've been able to routinely meet the EPA secondary standard and the North Dakota Department of Health's recommended upper limit for sulfate concentration in our drinking water.

The Sheyenne River is a critical part of Fargo's water supply and drought mitigation plans. As such, we have two perfected permits, one for natural flows in the Sheyenne and one for stored water in Lake Ashtabula. In addition, Fargo is an active participant in the Red River Valley Water Supply Project to bring Missouri water to eastern North Dakota during periods of water shortages or drought. The preferred option utilizes Lake Ashtabula and the Sheyenne River. Fargo's participation is, in part, predicated on the water quality that allows us to continue to meet the EPA secondary standard and North Dakota Department of Health upper recommended limit for sulfates in drinking water with our current treatment technologies.

I want to emphasize this is extremely important, and we need to emphasize the next statement I'm going to make. We certainly—Fargo recognizes the threat of flooding to the city of Devils Lake and surrounding areas. We also recognize the potential downstream impacts of an uncontrolled overflow from Devils Lake. So it is our desire to work cooperatively toward a mutually beneficial solution to address the flooding threat in Devils Lake and address the potential downstream water quality impacts on water systems that utilize the Sheyenne River as a water supply.

The Emergency Rule increased the allowable sulfate concentration in the Sheyenne River, measured at a .01 miles downstream of Baldhill Dam, to 750 milligrams per liter. Our review of historic USGS water quality data indicates that there is little or no change in Sheyenne River sulfate concentrations between Baldhill Dam and West Fargo. However, it's important to note that the Emergency Rule did not change the stream standard and correspondingly allowable sulfate concentration in the Sheyenne River at West Fargo remains at 450 milligrams per liter.

To that end, we have estimated the modifications necessary to our water treatment system to reduce the sulfate concentration from 450 milligrams per liter in the Sheyenne River to 250 milligrams per liter in our drinking water would cost upwards of $45 million.

We'd hope that an operational strategy can be developed for the Emergency Outlet that can control the maximum sulfate concentration in the Sheyenne River at West Fargo to the historic maximum level around 300 milligrams per liter. If that isn't possible, we would like to see a financial assistance program to be applied equivalently to all downstream water systems for the additional treatment upgrades necessary to reduce sulfate concentrations in drinking water to meet the EPA secondary standard and that the North Dakota Department of Health's upper recommended limit.

Once again, we want to thank you for the opportunity to present our concerns. We would be happy to answer questions—or somebody will be here to answer questions, and we also have staff present to address the technical matters.

And, in summary, until we get some more information on what you consider, you know, 300 is a figure that—is it arbitrary? Yes. Does it create problems? Right now we have a—what we consider an extremely good water system in the city of Fargo and, of course, there is some fear about it changing, but we also want to be able to communicate to the general public exactly what they can look forward to or what's going to happen and so forth. But the bottom line is very simple; we will work with our communities together to come up with a solution to this problem. Thank you.

Senator DORGAN. Mr. Mayor, thank you very much. I understand you do have to leave, and I'm sorry about that, but I understand your reasons for it so I appreciate your testimony. Is there someone here who can answer questions on your behalf?

Mayor WALAKER. Yes, Bruce Grubb is here. Matter of fact, I can put his up—since mine's on the floor. No. We thank—we thank you, Senator Dorgan, for this opportunity. We also fish up in Devils Lake. We understand that, you know, the whole process. I mean, it's an extremely huge problem. I mean, nobody—I repeat nobody—knew then where this was going in 1993. They didn't have a clue and to go over that, and now it's probably got its own weather system right now as far as moisture is concerned.

Senator DORGAN. Well, in 1991 they had a committee called the Lake Preservation Committee because there was too little water in Devils Lake and it's a big fishing industry.

Mayor WALAKER. Well, they're very appreciative of Jake.

Governor HOEVEN. Excuse me, Senator.

Senator DORGAN. Yes.

Governor HOEVEN. I'll be going with Mayor Walaker to get the flood update, but you've got Dave Glatt here and others who can cover.

Senator DORGAN. He will speak for you?

Governor HOEVEN. Yes.

[The information follows:]

NORTH DAKOTA STATE WATER COMMISSION—NORTH DAKOTA DEPARTMENT OF HEALTH

The State of North Dakota wants to thank you for your long term support of the Devils Lake Outlet program. We hope this response answers any questions you may have about the present situation.

As you know, Devils Lake has risen 27 feet since 1993. In terms of acreage, Devils Lake has increased from less than 50,000 acres to more than 160,000 acres during this time period. Available hydrologic outlooks suggest that water levels will continue to rise. That means more than 100,000 acres of land has been flooded. The

National Weather Service Hydrology Outlook released on March 5, 2010 states that there is a 90 percent probability that Devils Lake will reach 1,452.1 feet by September 2010. The volume increase from the current elevation of 1,450.1 feet to 1,452.1 feet is 346,500 acre-feet. An additional area of approximately 19,500 acres will be inundated. If an additional 1.6 million acre-feet of water enters Devils Lake, water would overflow into Tolna Coulee. Coupling the prediction for this year with the fact that Devils Lake had an estimated inflow of 585,000 acre-feet in 2009, as well as inflows greater than 100,000 acre-feet in 2001, 2004, 2005, and 2006, suggests that water levels will continue to rise at a rapid pace, threatening overflow if no action is taken.

The current elevation of Devils Lake is 1,450 feet mean sea level, only about 8 feet away from an overflow out of Stump Lake. If the rise of water into Devils Lake continues, spillover could occur through the Tolna Coulee into the Sheyenne River. The water involved in this discharge would constitute the poorest quality, highest sulfate water in the Devils Lake system. If this occurred, downstream communities, including Valley City, Lisbon, West Fargo, and Fargo, could receive a large volume of high sulfate water beginning at more than 2,200 milligrams per liter. To prevent this potential outcome, we plan to use the Devils Outlet along with mitigation and water retention methods to reduce water levels in the Devils Lake Basin.

Operation of the Devils Lake Outlet is the most manageable way for North Dakota to reduce the risk of the overflow of Devils Lake, and in doing so, protects downstream interests. If the Devils Lake Outlet were operated at 250 cubic feet per second for 210 days per year, 7.7 inches would be removed with a lake elevation of 1,450 feet mean sea level. The outlet can potentially remove 110,000 acre/feet of water annually. Per your request concerning how many inches of water the Devils Lake Outlet would remove if Devils Lake reached 1,455 feet mean sea level, 5.8 inches would be removed with continuous operation. Although operational constraints could limit these amounts, this demonstrates the ability of the outlet to greatly reduce water levels in the Devils Lake Basin over time.

One of the methods you suggest to reduce runoff into the Devils Lake Basin is landowner participation in a State program designed to pay landowners to retain water on their land. There are already several State and Federal programs serving this purpose including the State Water Commission's Extended Storage Acreage Program (ESAP), which pays landowners to store water that would otherwise have contributed to flooding around Devils Lake. Over the past 10 years, the ESAP program has been storing about 800 acre-feet at a cost of about $12,000 per year. Last August, the State Water Commission approved a 10 year extension of the ESAP program, allocating $142,250 in funds, Unfortunately for the region's agribusiness sector, there is already a great deal of involuntary storage of water on land throughout the Devils Lake Basin. An important factor worth noting is that farmers are often reluctant to flood portions of their fields, fearing inability to access the balance of their acreage, reduced crop yield, delayed planting, and long term negative impacts to the soil.

There are already a number of ways in which water is being retained in the Devils Lake Basin. Devils Lake itself has increased 110,000 acres since 1993, from 50,000 acres to 160,000 acres. Satellite imagery taken on November 4, 2009 showed that there are 112 square miles of surface water in the Devils Lake Basin not including Devils Lake and Stump Lake. In addition, the Fish and Wildlife Service has perpetual easements on 165,000 acres in five counties alone in the Devils Lake Basin. Prior to implementation of the Swampbuster program in 1986, farmers were allowed to use legal drains to drain wetland areas, often with Federal concurrence and cost-sharing, but since 1986 there has been little additional drainage of wetlands. The further retention of water on highly productive, valuable farmland would cause grave agricultural losses.

In addition to potential economic, social, and legal barriers, many studies by third party experts have shown that use of even a massive water retention program would not have a substantial impact on reducing drainage into Devils Lake. As an example, a Devils Lake Upper Basin Storage Evaluation was conducted for the U.S. Army Corps of Engineers, St. Paul District, by WEST Consultants, an independent organization from California. This study, conducted in 2001, found that if all the depressions that were identified by WEST as possibly drained were restored for wetland storage, there would be 127,835 acre/feet of storage space available. Use of this potential space would result in a reduction of 23,841 acre-feet of runoff into Devils Lake. At present, a reduction in input of 23,841 acre-feet would result in a less than 2 inch reduction in water levels. Wetland restoration is not a complete answer to this problem, and would be a costly step that would serve as only a small contributing factor to a larger solution. In response to your inquiry, we would not recommend that the State Legislature pursue measures that would force landowners

within the Devils Lake Basin to retain more water on their productive farm land. We certainly appreciate further ideas from you concerning potential Federal participation to turn off the "faucet" of upper basin inflows.

Weighing heavily in our decision to promote the greatest possible use of the State's Devils Lake outlet is the immediacy of potential overflow into the Tolna Coulee. The water level at which water from the Devils Lake basin could overflow into the Tolna Coulee is 1,458 feet. Using a United States Geological Service stochastic model which assumes that Devils Lake will reach 1,452 feet by June 30, there is a 10 percent chance that Devils Lake will reach an elevation of 1,458.1 feet by 2019 if the outlet is not used. These numbers demonstrate the fact that there is a relatively large possibility that Devils Lake could overflow into the Tolna Coulee, and ultimately into the Sheyenne River within 10 years if no preventative steps are taken. Under the same United States Geological Service stochastic model which assumes that Devils Lake will reach 1,452 feet by June 20, 2010, if the outlet operates at 250 cubic feet per second, constrained to meet the 450 milligram per liter sulfate level below Lake Ashtabula, there is a 5 percent chance of the lake reaching 1,458.4 feet mean sea level in 2019. Operation of the Devils Lake Outlet would reduce the risk of an overflow by approximately one-half, and would also reduce the volume and duration of a spill should one occur.

Many factors have been considered with regards to implementation of the Devils Lake Outlet, one of the foremost being the maintenance of water quality standards. Ensuring appropriate sulfate levels is one of the most critical aspects to monitor during this process, and the State of North Dakota is working to take necessary steps to ensure that sulfate levels do not exceed maximum limits as a result of outlet operations. To ensure the 450 milligrams per liter limit below Lake Ashtabula, State agencies will conduct extensive monitoring and management of Devils Lake Outlet operations. Real time conductivity measurements will be recorded at the gage locations, and will be made continuously available to the public. These measurements will provide a real time estimate of the total dissolved solids and sulfate concentrations for operational decisions. During ice free conditions, water will be sampled for sulfates 4 days a week at the Devils Lake Outlet, and once a week along the Sheyenne River at locations near Warwick, Cooperstown, Lake Ashtabula, Valley City, Lisbon and Horace. The North Dakota State Water Commission, with review and input from the statutorily established Outlet Advisory Committee, will control the release of water to ensure that water quality standards are met. Moreover, the outlet will not be operated when the releases would contribute to flooding downstream in the Sheyenne or Red River.

Since 2007, Valley City has been in the process of upgrading their 35-year-old water treatment plant as part of an effort to meet a 2014 EPA compliance deadline. Valley City officials approached the State of North Dakota with a request for assistance in meeting the EPA deadline, whereupon $12.5 million of loan and grant funds were provided for the project. The State of North Dakota has funded many cities with upgrades to satisfy EPA requirements and reduce the use of chemical additives during the treatment process. North Dakota is dedicated to providing its citizens with a high quality, of sufficient quantity water supply. The State will continue this effort with other cities, including West Fargo and Fargo, in dealing with water supply issues.

In summary, there are no easy solutions for the flooding problem in the Devils Lake basin. Be assured, the State of North Dakota is taking all necessary and reasonable steps to implement the most effective and safe measures to reduce or eliminate this persistent, costly problem.

Senator DORGAN. Let me ask you one question before you leave, however, if I might. It relates to the mayor's suggestion and the press thing that you referred to. If Fargo, for example, and others determine that they need for their own reasons to build a $45 million treatment plant, where would the money come from for that and is there a commitment from the State to fund that?

Governor HOEVEN. Really to be to add reverse osmosis to whatever they do and they've estimated roughly that could cost $45 million so we'd work with them to do that. Now, again, we're going to have to see what—we're not changing the stream standard, and Dave can talk to that, but we'll have to see what the sulfates are and if that's an issue, yes, then the State's going to work with them to do what they need to do whether it's reverse osmosis as an add

to their treatment plant or whatever joint solution they're undertaking anyway then we'll partner with them.

Senator DORGAN. I understand, but I think what the mayor was suggesting was if they feel as a result of the science and the understanding of the science that they need to do something here that he refers to as costing $45 million. One of the interests of this subcommittee, because we spend a lot of money on water issues around the country, is where will that funding come from?

Governor HOEVEN. Oh, we're going to work with them through the Water Commission, and we'd love some help from the Federal participation as well, but we're certainly going to stand with them because this is about making sure that we take a comprehensive approach to solving this issue not only for Devils Lake but all the communities, Fargo, West Fargo, Valley City as we were—have already done. So, yes, we're going to be there working with them, and we'd love to have you as a partner as well in that bonding effort depending on what it's going—but if it's $45 million reverse osmosis, we're certainly going to work through the Water Commission help with that as we did in the past.

Senator DORGAN. Well, I understand you have to leave and with your permission I'm going to send some written questions from the committee to you in those areas, but I appreciate very much your being here.

Governor HOEVEN. Yes. And, again, I appreciate your support in the Devils Lake outlet and this operation. Thank you.

Senator DORGAN. Thank you. Mr. Glatt.

STATEMENT OF L. DAVID GLATT, CHIEF, ENVIRONMENTAL HEALTH SECTION, NORTH DAKOTA DEPARTMENT OF HEALTH

Mr. GLATT. Good morning, Senator. Thank you for having this opportunity to talk to the subcommittee. It's nice to sit sometimes on this side of the hearing table as we go through this, but my name's Dave Glatt. I'm chief of the Environmental Health Section for the North Dakota Department of Health. Our department is responsible for many of the environmental protection programs implemented in the State. A number of these programs are provided through primacy agreements with and oversight by the U.S. Environmental Protection Agency. I'm here today to provide a brief overview of the current process associated with the water quality standards being proposed and considered by the department.

The issue before the department today relates to the proposed change in the sulfate standards from 450 milligrams per liter to 750 milligrams per liter for a portion of the Sheyenne River from its headwaters to .1 miles downstream of Baldhill Dam. It is important to note that the proposed Sheyenne River sulfate standard change is part of a larger, EPA-required, triennial water quality standard review. The triennial review includes changes to the existing standards that reflect the current science and status of water quality throughout North Dakota. The department is currently in the middle of a required public review and comment period set to end on March 1, 2010. Upon completion of the comment period and prior to making a final decision regarding the proposed water quality standards change, the department is required to provide a written response to all comments. After the department has made a

final determination regarding the standards, it must seek review and approval from the following: The North Dakota Water Pollution Control Board, which is comprised of representatives that include private citizens, municipalities, State agencies, Federal agencies, agriculture and industry.

We're also required to get approval from the North Dakota State Health Council. Members include the medical committee, private citizens, municipalities and industry—industry as well.

We're also required to go through the North Dakota Office of the Attorney General.

We're also required to go through—get approval from the Administrative Rules Committee where basic—where they are comprised of legislators on that committee.

And, finally, after that then we are required to go to the U.S. Department of Protection Agency, which they review our response to comments, the science, and determine whether or not those—our determinations can be supported or needs to be changed.

It's important to note that the water quality standards will be considered finally—final only after review and approval by all of the previously mentioned agencies and boards.

In formulating any proposed decision, whether it is concerning a permit or rule, the department must follow prescriptive legal requirements and applicable science. In the issue being discussed today, the department has evaluated and continues to evaluate the following: Historical and current water quality data. For several decades we have either conducted activities as part of department duties or partnered with other State and Federal agencies in the collection of water quality data from locations in Devils Lake, the Sheyenne River and the Red River to the Canadian border. This continuing effort includes the collection of samples for laboratory analysis.

The State Water Commission and the department also have partnered with the U.S. Geological Survey to install gauging stations at seven locations from the headwaters of the Sheyenne River to below the Baldhill Dam, providing web-accessible data on a 24/7 basis. Additional USGS water quality and quantity stations are located along the Sheyenne and Red Rivers to the Canadian border. I also state that all our data, water quality data, is available on the Web page and is accessible to the public or they can just ask us for it. We will get it to them.

We've also conducted biota surveys. The department has completed biological assessments either on its own or in cooperation with other State and Federal agencies. Of particular note are the first ones that count—the biota survey conducted by the Council on Environmental Quality directed—they directed that study, a biological survey of Devils Lake and also a survey of several locations in the upper Sheyenne River conducted by a private consultant hired by the State Water Commission. Also a biological diversity assessment conducted by the department. And, again, also a survey conducted by the International Red River Board Parasite and Pathogen survey directed by representatives of the Bureau of Reclamation and Canada.

We've also looked at other water quality standards. In evaluating the proposed sulfate change, the department also reviewed EPA-ap-

proved water quality standards from other States to ensure consistency in the standards and science. It's important to note that Minnesota has a sulfate standard of 400 milligrams per liter in their drinking water primarily for infants and babies. South Dakota is looking at 500 not to be higher than 875, and they're also standards—because it's a secondary standard, is non-enforceable primarily because there isn't a concern relating to health, but it's more of an aesthetic issue. We have several communities in the State that drink considerably more than 250 and some above a thousand milligrams per liter with no observed health effects.

Please note that the proposed change for the Sheyenne River applies only to the area previously identified and does not change any standard essentially downstream of Baldhill Dam or on the Red River. We are required as part of our annual review to commit and comply with all the existing water quality standards downstream, and in our proposed changes it does say that we will maintain compliance at 450 downstream and 250 in the Red River for sulfate.

The department is also a strong advocate of the legislature authorized Outlet Advisory Committee to ensure that people impacted in the Devils Lake area and downstream of the outlet have a strong voice in the operation of the outlet.

The department is keenly aware of its obligations to the citizens of the State and also to the EPA in the implementation of the Clean Water Act. We are bound by State and Federal law to thoroughly assess and evaluate each use and discharge into waters of the State for potential impacts on downstream designated uses. Potential impacts are evaluated for each specific discharge utilizing the best available science and applicable law. Discharges include those from point sources such as municipal/industrial wastewater systems and from agricultural operations.

This concludes my testimony. I'd be happy to answer any questions you may have.

Senator DORGAN. Mr. Glatt, thank you very much. We appreciate you being here. I do have a series of questions. Next Mayor Bott, the mayor of Devils Lake. We welcome you.

STATEMENT OF FRED BOTT, MAYOR, CITY OF DEVILS LAKE; PRESIDENT, DEVILS LAKE CITY COMMISSION

Mayor BOTT. Good morning, Senator. Thank you for the opportunity to speak with you today regarding the current challenges facing the city of Devils Lake and surrounding area and the potential implications related to rising water levels within the lake. My name is Fred Bott. I'm President of the Devils Lake City Commission.

As you are aware, the city of Devils Lake has faced a multitude of challenges resulting from fluctuating lake levels. Last year the city reluctantly agreed to enter into a Project Cooperative Agreement with the Corps of Engineers to increase the protection level of the embankment protecting the city and surrounding area. The city was extremely concerned about entering into this agreement because we felt that continued flooding and increasing lake elevations will have dire economic impacts to the city. We understood that if the lake continued to rise it would flood an additional 100,000 acres or more of prime farmland, flood countless homes,

and be devastating to our neighboring communities. Therefore, the city of Devils Lake fully supports efforts from the North Dakota Department of Health and the North Dakota State Water Commission to remove additional water from the lake to reduce flood damages.

With the drastic rise in Devils Lake again this—again last year and the continuing precipitation we've been receiving, we feel it is imperative that emergency measures be taken to address our continued flooding. The city of Devils Lake does not want to pass our problems along downstream, but it appears obvious to us that if adjustments to downstream water quality and quantity requirements are not made to allow increased flows from the lake, a natural overflow could result in extreme water quality and flooding impacts downstream in the future. Even with the expansion of the embankment protecting our area, it will not be able to contain the lake should it continue to rise. Therefore, working together now to develop effective flood relief measures rather than waiting to see if Mother Nature will address the issue on her own future is the most logical approach to solve this issue.

On February 11, 2009, I had the honor to testify before you, Senator Dorgan, in Washington, DC. One of my statements was as follows: As you will hear today from representatives of the National Weather Service it appears there is a significant chance the lake will experience a dramatic rise this spring. By the end of February 2009, we knew something was coming. It was a rise of 3 feet 7 inches and 36 of those 43 inches remain on the lake. As of the morning of February 19, 2010, it appears there is a significant chance the lake will experience a dramatic rise this spring. Devils Lake is rapidly building to an overflow.

The city of Devils Lake fully supports the proposed water quality adjustments within the Sheyenne River and feels necessary adjustments need to be made to allow larger amounts of water to be removed from the lake to prevent its continued rise.

PREPARED STATEMENT

Again, Senator, thank you for the opportunity to speak today. We appreciate that you continue to understand the great challenges that lie ahead of us and hope we are able to work together to find effective solutions.

[The statement follows:]

PREPARED STATEMENT OF FRED BOTT

Senator Dorgan and subcommittee members, thank you for the opportunity to speak with you today regarding the current challenges facing the city of Devils Lake and surrounding area and the potential implications related to rising water levels within the lake. My name is Fred Bott, I am the president of the Devils Lake City Commission.

As you are aware, the city of Devils Lake has faced a multitude of challenges resulting from fluctuating lake levels. Last year, the city reluctantly agreed to enter into a Project Cooperative Agreement with the Corps of Engineers to increase the protection level of the embankment protecting the city and surrounding area. The city was extremely concerned about entering into this agreement because we felt that continued flooding and increasing lake elevations will have dire economic impacts to the city. We understood that if the lake continued to rise, it could flood an additional 100,000 acres or more of prime farmland, flood countless homes and be devastating to our neighboring communities. Therefore, the city of Devils Lake fully supports efforts from the North Dakota Department of Health and the North Da-

kota State Water Commission to remove additional water from the lake to reduce flood damages.

With the drastic rise in Devils Lake again last year and the continuing precipitation that we have been receiving, we feel that it is imperative that emergency measures be taken to address our continued flooding. The city of Devils Lake does not want to pass our problems along downstream, but it appears obvious to us that if adjustments to downstream water quality/quantity requirements are not made to allow increased flows from the lake, a natural overflow could result in extreme water quality and flooding impacts downstream in the future. Even with the expansion of the embankment protecting our area, it will not be able to contain the lake should it continue to rise. Therefore, working together now to develop effective flood relief measures, rather than waiting to see if Mother Nature will address the issue on her own in the future, is the most logical approach to solve this issue.

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The city of Devils Lake fully supports the proposed water quality adjustments within the Sheyenne River and feels necessary adjustments need to be made to allow larger amounts of water to be removed from the lake to prevent its continued rise.

Again, thank you for the opportunity to speak today. We appreciate that you continue to understand the great challenges that lie ahead of us and hope we are able to work together to find effective solutions.

Senator DORGAN. Mayor Bott, thank you very much. Jon Cameron is here on behalf of the mayor of Valley City. Mr. Cameron.

STATEMENT OF JON CAMERON, CITY ADMINISTRATOR, VALLEY CITY

Mr. CAMERON. Good morning, Senator. Again, I'm Jon Cameron, City Administrator for Valley City, and I'm honored to be here today representing Mayor Mary Lee Nielson and the City Commission of Valley City. The stated purpose of the hearing today is to hear from multiple community officials about the impact of the increase in the allowable sulfate levels in the Sheyenne River that those will have on drinking water quality and those communities served by the Sheyenne River.

A brief history of the Valley City water treatment plant will help clarify the overall understanding of this issue for our city. The plant in Valley City was constructed in 1972 and basically used a lime softener process for water treatment. There are currently two wild water sources utilized by the plant, surface water from the Sheyenne River and groundwater from the Valley City aquifer, which is under direct influence of the river. When the city is operating on 100 percent surface water, the plant produces approximately 3 million gallons per day. Due to operational limitations of the groundwater wells, the plant produces 2.2 million gallons per day running solely on the ground—groundwater. It is part of a plan plant upgrade program the city recently completed the chlorine chloramine contact basin project, which provides control of disinfection contact in order to meet Federal drinking water regulation.

The next phase of our upgrade project was to create redundancy in the lime softener line feed system. Planning for this project was underway when proposed increase of the sulfate levels in Sheyenne River was announced last summer.

We initiated contact immediately with officials of North Dakota Department of Health, State Water Commission, and the office of

the Governor regarding potential impact of increased sulfates in the drinking water in Valley City. At the same time we had dialogue with Advanced Engineering and Environmental Services Incorporated to contract water engineering firms for Valley City. We determined at that time the best and most practical way to treat the surface water effectively was through the installation of reverse osmosis or membrane water treatment facility. The membrane facility would not only treat and filter the increased sulfates, but also be able to remove turbidity and soften the water.

Through the efforts of our local elected officials funding assistance was obtained through the State Water Commission in the amount of $9.2 million. The new system is securing two $400,000 corporations for a total of $800,000. And finally $4.6 million in funds were secured through ARRA, which consisted of $2.6 million forgivable loan and $2 million loan payable——

Senator DORGAN. ARRA is the economic stimulus?

Mr. CAMERON. Yes, sir. That loan $2 million payable over 20 years at 1 percent.

PREPARED STATEMENT

Our design work is under way and construction should begin in late 2010 with a projected completion date of 2011. We in Valley City are appreciative of the divine efforts of you, Senator, and the State officials of North Dakota to help Valley City respond to the water treatment plant issues in a manner that will result in a treatment plant to meet all current and known future water treatment requirements while at the same time minimizing the long-term cost to our locals out there. Thank you again for the opportunity.

[The statement follows:]

PREPARED STATEMENT OF JON CAMERON

Good morning. I am Jon Cameron, the city administrator in Valley City, North Dakota, and I am honored to be here today representing Mayor Mary Lee Nielson and the city commission of Valley City. The stated purpose of the hearing today is to hear from local community officials about the impact the increase in the allowable sulfate levels in the Sheyenne River will have on drinking water quality in those communities served by the Sheyenne River.

A brief history of the Valley City Water Treatment Plant will help with the overall understanding of this issue for our city. The plant in Valley City was constructed in 1972 and basically uses a lime softening process for water treatment. There are currently two raw water sources utilized by the plant, surface water from the Sheyenne River and groundwater from the Valley City Aquifer which is under direct influence of the river. When the city is operating on 100 percent surface water, the plant produces approximately 3.0 MGD (2,080 gpm). Due to operational limitations of the city's groundwater wells, the plant typically produces approximately 2.2 MGD (1,500 gpm) when running solely on groundwater.

As part of a planned plant upgrade program, the city recently completed a Chlorine/Chloramine Contact Basin Project which provides control of disinfection contact time in order to meet Federal drinking water regulations. The next phase of our upgrade project was to create redundancy in the lime softening and lime feed system. Planning for this project was underway when the proposed increase to the sulfate levels in the Sheyenne River was announced last summer.

We initiated contact with officials from the North Dakota Department of Health, State Water Commission and the Office of the Governor regarding the potential impact of the increased sulfates on the drinking water in Valley City. At the same time, we had dialogue with Advanced Engineering & Environmental Services, Inc., the contracted water engineering firm for Valley City. It was determined that the best and most practical way to treat the surface water effectively was through the

installation of a reverse osmosis or membrane water treatment facility. The membrane facility would not only treat and filter the increased sulfates but would also be able to remove turbidity, and soften the water.

Through the efforts of our local elected officials, funding assistance was obtained through the State Water Commission in the amount of $9.2 million. Senator Dorgan assisted in securing two $400,000 appropriations for a total of $800,000. Finally, $4.6 million in funds were secured through ARRA, which consisted of a $2.6 million forgivable loan and a $2.0 million loan repayable over 20 years at 1 percent. Design work is underway and construction should begin in late 2010 with a projected completion at the end of 2011.

We in Valley City are appreciative of the combined efforts of Senator Dorgan and State Officials in North Dakota to help Valley City respond to the water treatment plant issues in a manner that will result in a treatment plant that will meet all current and known future water treatment requirements while at the same time minimizing the long-term costs to the local taxpayers.

Senator DORGAN. Mr. Cameron, thank you very much. Next, we'll hear from Dr. Wei Lin. Did I pronounce that correctly?

Dr. LIN. Yes.

Senator DORGAN. Dr. Lin is an associate professor of civil engineering at North Dakota State University.

STATEMENT OF WEI LIN, ASSOCIATE PROFESSOR, DEPARTMENT OF CIVIL ENGINEERING, NORTH DAKOTA STATE UNIVERSITY

Dr. LIN. Good morning, Senator Dorgan. My name is Wei Lin. I'm an associate professor in the Department of Civil Engineering at North Dakota State University. I'm an environmental engineer and my specialty areas are water quality management and water in the wastewater treatment. I'm also a member of the North Dakota State Water Pollution Control Board. I am pleased to provide the following information on potential impact of sulfate on various water uses in reference to the proposed increase of allowable sulfate levels in the Sheyenne River.

Sulfate is a commonly occurring negatively charged ion in natural waters. At high concentrations, sulfate may cause some adverse health and environment impacts including taste in drinking water and the laxative effects; increase of soil salinity and reduction in productivity; corrosion of water distribution network; and chemical reactions that affect lake water quality.

Sulfate in drinking water has a secondary maximum contamination level of 250 milligrams per liter. A salty taste may be experienced when sulfate concentration exceeds 250 milligrams per liter. Secondary drinking water standards are established for aesthetic considerations and are not enforceable by USEPA. However, taste and odors in drinking water are two of the top consumer complaints according to American Water Works Association, a professional organization of water industry. Taste in water may lead to consumers drinking less water and thus losing their appetite.

Health concerns regarding sulfate in drinking water have been raised because laxative effect of sulfate on infant and transient populations. Diarrhea and dehydration conditions may be induced by sudden increase of sulfate level in drinking water. Infants receiving their first bottles containing tap water are more susceptible than adults to diarrheal water loss because of differences in gastrointestinal structure and function. As a precaution, Minnesota Department of Health recommends that water with a sulfate level exceeding 400 milligrams per liter should not be used in the preparation of infant formula. Older children and adults become accus-

tomed to higher sulfate levels after few days. Evidence indicates that people acclimate to presence of sulfate in drinking water. An earlier informal survey conducted by the North Dakota Department of Health—actually about 60 years ago, which has been often referenced as being a scientific literature, suggested that water sulfate level greater than 750 milligrams per liter was considered a laxative by most consumers. No chronic adverse health impact from exposure to sulfate in water has been reported. An expert panel assembled by Centers for Disease Control and Prevention recommended a health advisory in places where drinking water has sulfate levels greater than 500 milligrams per liter. Animals are also found sensitive to high level of sulfate. In young animals, high level may be associated with severe diarrhea.

High sulfate concentration in Devils Lake is associated with high salinity, which is often measured as electrical conductivity. Higher the sulfate concentration—or higher salt concentration, higher the electrical conductivity. Sulfate is a nutrient to plants at low concentrations. Present of sulfate as dissolved gypsum calcium sulfate may reduce sodium hazard by reducing sodium to calcium and magnesium ratio, called sodium adsorption ratio. However, high salinity is proven to have a negative impact on crop yield. A recent study conducted by NDSU researchers indicates potential accumulation of sulfate and increase of salinity in topsoil after irrigating a field with water containing relatively high sulfate and salinity.

Now, I'd like to talk about the potential impact of sulfate on the aquatic ecosystem. We all know that under anaerobic conditions—that's conditions without oxygen—sulfate may be reduced to sulfide through microbial reactions. Hydrogen sulfide formed in these reactions gives a rotten egg smell of sewage. Sulfate reduction may also occur in organic rich sediments in lakes and slow moving rivers. In sediment, sulfate serves as an alternative of oxygen and stimulates the decomposition of organic matter. As organic matter is decomposed sulfate is reduced to sulfide at same time phosphate and ammonia is released from decomposed organic matter. Instead of forming hydrogen sulfide, sulfide ions in sediment have a tendency to bind with metals such as iron and aluminum and releasing phosphate that is originally associated with these metal ions. Scientists give this process a term internal eutrophication. Results from scientific studies show that an increase of sulfate concentration may cause more nitrogen and phosphorous release from sediments and therefore resulting in more algal growth in lakes.

The importance of increased eutrophication on the aquatic ecosystem and—or the impact—I'm sorry. The impact of increased eutrophication on the aquatic system and the economy could be significant. Algal bloom will not only cause unpleasant conditions for recreational use of the lake, but blue-green algae may release toxins that make the water unsafe for human and animal consumption. Highly eutrophic lakes typically have low oxygen level near the bottom and experience strong daily oxygen variations in the top layer. Oxygen limitation will have adverse impact on the fish population. It will cause disappearance of game fish and encourage the growth of trash fish. Impact of the increased Sheyenne River sulfate level on Lake Ashtabula is not clear and it could be long term. Once a lake becomes eutrophic it is very difficult to reverse the

process. I strongly support a comprehensive monitoring program on Lake Ashtabula to track the progression of sulfate level and the change in other water quality and ecological parameters. I would like to recommend establishment of a research program focusing on Lake Ashtabula water quality and its aquatic system. The research will include field sampling/surveying, experimental studies, and model simulations to understand the impact of sulfate and other environmental stressors on lake chemistry and biological processes to predict short-and long-term effects on water quality and ecosystem, and to study potential socio-economical impact to the region.

Sulfates are important in both public and industrial water supplies because of the tendency of water containing high amounts of sulfates to form hard scales in boilers and heat exchangers. Sulfate cannot be removed by conventional water treatment process as earlier speakers already mentioned. Therefore, high sulfate level in source water will result in high sulfate concentration in drinking water unless advanced treatment methods are employed in the water treatment plan. Effective advanced water treatment methods for sulfate removal include reverse osmosis, ion exchange, and distillation.

PREPARED STATEMENT

This ends my testimony. Thank you for your attention and opportunity.

[The statement follows:]

PREPARED STATEMENT OF WEI LIN

My name is Wei Lin. I am an associate professor in the Department of Civil Engineering at North Dakota State University (NDSU). I am an environmental engineer and my specialty areas are water quality management, and water/wastewater treatment. I am also a member of the North Dakota State Water Pollution Control Board. I am pleased to provide the following information on potential impact of sulfate on various water uses in reference to proposed increase of allowable sulfate levels in the Sheyenne River.

Sulfate (SO_2^{2-}) is a commonly occurring negatively charged ion (anion) in natural waters. At high concentrations, sulfate may cause some adverse health and environmental impacts, including: taste in drinking water and laxative effects; increase of soil salinity and reduction in productivity; corrosion of water distribution network; and chemical reactions that affect lake water quality.

Sulfate in drinking water has a secondary maximum contaminant level (SMCL) of 250 mg/L. A salty taste may be experienced when sulfate concentration exceeds 250 mg/L. Secondary drinking water standards are established for aesthetic considerations and are not enforced by USEPA. However, tastes and odors in drinking water are one of the top customer complaints according to American Water Works Association, a professional organization of the water industry. Taste in tap water may lead to consumers drinking less water and losing their appetite.

Health concerns regarding sulfate in drinking water have been raised because laxative effects of sulfate on infants and transient populations (USEPA, 1999a). Diarrhea and dehydration conditions may be induced by a sudden increase of sulfate levels in drinking water. Infants receiving their first bottles containing tap water are more susceptible than adults to diarrheal water loss because of differences in gastrointestinal structure and function (USEPA, 2003). As a precaution, Minnesota Department of Health (2006) recommends that water with a sulfate level exceeding 400 mg/L should not be used in the preparation of infant formula. Older children and adults become accustomed to high sulfated levels after a few days. Evidence indicates that people acclimated to the presence of sulfate in drinking water. An informal survey conducted by the North Dakota Department of Health suggested that water sulfate levels greater than 750 mg/L was considered laxative by most consumers. No chronic adverse health impact from exposure to sulfate in water has

been reported (USEPA, 1994). An expert panel assembled by the Center for Disease Control and Prevention recommended a health advisory in places where drinking water has sulfate levels greater than 500 mg/L (USEPA, 1999b). Animals are also found sensitive to high levels of sulfate. In young animals, high levels may be associated with severe diarrhea.

High sulfate concentration in Devils Lake is associated with high salinity, which is often measured as electrical conductivity. Higher the salt concentration, higher the electrical conductivity. Sulfate is a nutrient to plants at low concentrations. Present of sulfate as dissolved gypsum (calcium sulfate) may reduce sodium hazard by reducing sodium to calcium and magnesium ratio, called sodium adsorption ratio (SAR). However, high salinity is proven to have a negative impact on crop yield. A recent study conducted by NDSU researchers indicates potential accumulation of sulfate in the topsoil after irrigating with water containing relatively high sulfate and salinity.

Now, I'd like to talk about the potential impact of sulfate on the aquatic ecosystem. We all know that under anaerobic (without oxygen) conditions, sulfate may be reduced to sulfide through microbial reactions. Hydrogen sulfide formed in these reactions gives a "rotten egg smell" of sewage. Sulfate reduction may also occur in organic rich sediments in lakes and slow moving rivers. In sediment, sulfate serves as an alternative of oxygen and stimulates the decomposition of organic matter. As organic matter is decomposed sulfate is reduced to sulfide. Phosphate and ammonia are released from decomposed organic matter. Instead of forming hydrogen sulfide, sulfide ions in sediment have a tendency to bind with metals such as iron and aluminum and releasing phosphate that is originally associated with these metal ions (Smolders et al., 2006). Scientists give this process a term "internal eutrophication". Results from scientific studies, show that an increase of sulfate concentration may cause more N and P release from sediments and therefore result in more algal growth in lakes.

The impact of increased eutrophication on the aquatic ecosystem and the economy could be significant. Algal bloom will not only cause unpleasant conditions for recreational use of a lake, but blue-green algae may release toxins that makes water unsafe for human and animal consumption. Highly eutrophic lakes typically have low oxygen level near the bottom and experience strong daily oxygen variations in the top layer. Oxygen limitation will have adverse impact on the fish population. It will cause disappearance of game fish and encourage the growth of trash fish. Impact of the increased Sheyenne River sulfate level on Lake Ashtabula is not clear and could be long term. Once a lake becomes eutrophic it is very difficult to reverse the process. I strongly support a comprehensive monitoring program on Lake Ashtabula to track the progression of sulfate level and changes in other water quality and ecological parameters. I would like to recommend establishment of a research program focusing on Lake Ashtabula water quality and its aquatic ecosystem. The research will be include field sampling/surveying, experimental studies, and model simulations to understand the impact of sulfate and other environmental stressors on lake chemistry and biological processes, to predict short and long-term effects on water quality and ecosystem, and to study potential socio-economical impacts to the region.

Sulfates are important in both public and industrial water supplies because of the tendency of waters containing appreciable amounts to form hard scales in boilers and heat exchangers. Sulfate cannot be removed by conventional water treatment processes. Therefore, high sulfate level in source water will result in high sulfate concentration in drinking water unless advanced treatment methods are employed in the water treatment process. Effective advanced water treatment methods include: reverse osmosis, ion exchange, and distillation.

Thank you for your attention and the opportunity.

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Senator DORGAN. Dr. Lin, thank you very much. We appreciate you being here, and next Mr. Jim Stevens, who represents the organization People to Save the Sheyenne River.

STATEMENT OF JIM STEVENS, PEOPLE TO SAVE THE SHEYENNE RIVER

Mr. STEVENS. Thank you, Senator. I feel honored to be here today. I did explain to Justin when he called me that I am a past president of that organization, but I would have to be speaking today as an individual who lives in rural North Dakota along the Sheyenne River. My family goes back over 130 years in that area, and my great-grandfather homesteaded parts of what we have right now and my grandchildren will be the sixth generation on this land.

We are very concerned about the—any added Devils Lake water to our river. We've experienced many floods over the years and any additional water from Devils Lake can spill out onto the fields and up and down the valley, not just our land, but down the whole valley and sit on these fields for weeks on end, and with the added sulfate levels, could be detrimental to our soil.

In past years the Sheyenne River has decreased to less than 50 cfs and the banks get a chance to re-vegetate and heal for the next flood, which seems to come more often each year. We in 1993 had a severe summer flood when we got 10 to 12 inches of rain in our area and within 24 hours we had a major flood. They can't shut down the Devils Lake outlet to help in a situation like that. That extra flow could be catastrophe for many local citizens and the towns of Fort Ransom, Lisbon, Enderlin, on down to the Red River Valley area.

The State Water Commission and the State Health Department have claimed that these high sulfates will only reach a little bit below Baldhill Dam and Lake Ashtabula. I wonder if they have done enough studies. What is it going to do to Baldhill Dam? And it would be hard for me to believe that it will not gradually go further down over a number of years. They might be looking at the first year. What about 5, 10 years down the road? The city of Devils Lake has purchased land in the Tolna Coulee and already lowered it 1 foot. They would like to lower it another 5 feet. Any farmer cutting a drain would be in deep trouble if he tried that, but it seems like the Governor goes under him or above the law.

I know an older gentleman from east of New Rockford who was at meetings decades ago when they were planning to increase draining in the upper basin to bring water to the salt plat of Devils Lake. A man of knowledge stood up and told them if you're planning this amount of draining, you better have a plan in place when you get too much water, and no one believed him.

I do not believe that they have done a sufficient amount of controlling the water coming into Devils Lake. As long as they're ungated, manmade drains coming into that area, they are not doing what they should to prevent the flood. It has been stated by officials from Devils Lake that they do not want the lake to go below 1,446 because it's been very good for their economy. They

want to turn this into a river and then have your Devils Lake outlet. But as was said earlier, the Devils Lake outlet would take up to 3 to 4 inches off the lake a year if it's increased to this level. Before when they set up the 4 inches, it took a fraction of an inch. That would never prevent a natural overflow anyway. You have to do other measures to prevent the natural overflow. If it's going to increase 3 feet with all that rain coming into Devils Lake, 4 inches is not going to help.

PREPARED STATEMENT

Thank you very much for your time, Senator, and I'm honored to be here.

[The statement follows:]

PREPARED STATEMENT OF JIM STEVENS

In his announcement of the February 19, 2010 hearing in west Fargo, North Dakota, to take testimony on the Devils Lake Outlet Project, Senator Byron Dorgan made it clear that he believed that "transferring water problems from one region of North Dakota to another" was not acceptable.

People to Save the Sheyenne agree with Senator Dorgan's assessment and wish to add this information as part of the record objecting to the construction and operation of the Devils Lake Outlet as a method of dealing with excess water on Devils Lake, North Dakota.

The Main Point of Contention.—What are the chief causes of the rise of Devils Lake over the past 25 years and what is the best method of dealing with that situation? Officials have not yet considered seriously the restoration of upper basin drained wetlands which would result in more acres of storage. Since over 350,000 acres of upper basin wetlands have been drained, it stands to reason that those drained acres contribute to higher levels on Devils Lake.

Here's What Needs To Be Done First.—A complete and objective scientific study by outside experts of the hydrology of the entire Devils Lake Basin to determine the extent of the drainage and the amount of water that drainage has produced on Devils Lake.

The North Dakota State Water Commission built its outlet from Devils Lake into the Sheyenne River in 2005. The original permit limited sulfate levels in the Sheyenne River to 300 milligrams per liter. The North Dakota Department of Health increased that limit in 2008 to 450 mg/L. On July 15, 2009, Governor John Hoeven, using Emergency Rules, voided the original permit and approved an increase in the sulfate limit in the upper Sheyenne River to 750 mg/L, a move that would allow almost unlimited pumping of Devils Lake water into the Sheyenne. The SWC is planning to increase the flow of water from Devils Lake into the river this year from 100 cubic feet per second to 250 cfs. Such an increase will result in serious degradation of the water quality in the river, turning it into a miniature Devils Lake ditch.

No scientific, objective studies of the results of adding more Devils Lake water to the river have been done. Instead, both the North Dakota Department of Health and the SWC have stated that such an increase of Devils Lake water would not change the usefulness of Sheyenne River water.

The Governor made his decision without scientific study and without consultation with those who will be affected by increased flows of Devils Lake water into the Sheyenne River.

Who should have been involved in making the decision to void the original outlet permit? Well, besides Valley City and Barnes County, North Dakota, here are a few:

—*The U.S. Fish Hatchery.*—Can 50 species of fish (and 9 species of mussels) hatch, survive and thrive in Devils Lake water at the Valley City National Fish Hatchery? If fish (and mussels) reproduce naturally in Devils Lake water, why is Devils Lake still being stocked? How many species live, reproduce and thrive in Devils Lake water?

—*The North Dakota Game and Fish Department.*—What will 100,000 acre/feet of Devils Lake water do to Lake Ashtabula? What is the North Dakota Game and Fish response to the change in water quality, to what those changes will do to recreation on the lake? What about cabin owners around the lake?

—*The U.S. Army Corps of Engineers.*—What changes will the U.S. Army Corps of Engineers make to its operational plan for Lake Ashtabula as a result of 250

cfs additional water for 7 months of the year? Will there be an earlier and deeper spring drawdown? Who has jurisdiction, the Corps or the North Dakota State Water Commission, when it comes to deciding when and how much water to release? What happens when the sulfate level in the lake rises above 450 mg/L? What happens when that water is released downstream into the river?

—*Landowners Along the Sheyenne River.*—What will happen to the Sheyenne River between Devils Lake and Lake Ashtabula, once sulfate-and-other-contaminant-laden Devils Lake water becomes 80 or 90 percent of the total water in the river? The Sheyenne River between Devils Lake and Lake Ashtabula will contain almost 700 mg/L sulfate. What will that do to the ecology of the river? To livestock?

—*Cities Such as Fargo and West Fargo.*—How will the Sheyenne Diversion around west Fargo be impacted by continuously higher flows? More erosion? That's what will occur in the entire Sheyenne River. What difference will higher flows of contaminated Devils Lake water do to Fargo water supply when it draws water from the Sheyenne?

—*Canada.*—Have Canadian concerns about biota transfer been adequately addressed? The FEIS of the Corps' Outlet Project seem to indicate that they have not. And what about added levels of contaminated Devils Lake water in general? What about using the International Joint Commission to mediate?

—*The U.S. Bureau of Reclamation.*—Where are the studies showing the effects of Devils Lake water on the RRBWSP? Has the Red River Basin Water Supply Project taken Devils Lake water into consideration? If so, what are the ramifications of more Devils Lake water in the Sheyenne? Where are the studies showing the impacts? Is Devils Lake water part of the plan to get Missouri River water to Fargo?

When the SWC pumps 250 cubic feet per second Devils Lake water into the river and the RRVWSP adds another 125 cfs, what will the effects be on erosion and flooding along the Sheyenne River? When the river flows at less than 50 cfs in the fall of the year, what will adding 600 percent more water do?

All of these affected parties should have facts and scientific data—not just verbal assurances—to reveal the effects of adding 250 cfs Devils Lake water to the Sheyenne River.

But when Governor Hoeven on July 15, 2009 signed the letter allowing the use of Emergency Rules to void the permit to drain and replace it with a plan that will allow degradation of the Sheyenne River, none of these constituents had any voice in the matter. An arbitrary and capricious act replaced science, common sense and community involvement.

People to Save the Sheyenne requests U.S. Senate Appropriations Subcommittee on Energy and Water Development withhold Federal funding for Devils Lake projects, including money to be spent on infrastructure, until a complete, comprehensive hydrologic study of the entire Devils Lake Basin, including causes of the rise of Devils Lake and methods of dealing with the problems, has been authorized and initiated.

[From the Times-Record, February 15, 2010]

STATE OFFICIALS NOT DEALING TRUTHFULLY WHEN IT COMES TO DEVILS LAKE OUTLET

North Dakota Department of Health Administrator Dr. Terry Dwelle, Environmental Health Section Chief L. David Glatt and Assistant State Engineer Todd Sando's February 8 letter responding to the Times-Record's February 2 editorial on the Devils Lake outlet warrants a factual response.

They claim State agencies have informed numerous Federal agencies, including the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Department of State, the White House Council on Environmental Quality and Canadian officials about flooding at Devils Lake and operation of the outlet. What they fail to say is that much of the information they have provided to Federal agencies, Canadian officials and the public regarding the operation of the outlet has been incomplete, misleading and frequently deliberately false.

For example, based on information provided by North Dakota agencies, Senators Byron Dorgan and Kent Conrad and Congressman Earl Pomeroy told U.S. Department of State officials on July 12, 2005 that it was imperative to disregard the concerns of Canadian officials and allow immediate operation of the outlet because: "The longer we postpone the solution to this flooding crisis, the more danger North

Dakota, Canada, and surrounding areas will face. The Devils Lake outlet project needs to be in full operation as soon as possible."

By 2008, the $28 million outlet had removed the equivalent of one-tenth of an inch of water from the lake at an annual operating cost of over a quarter of a million dollars, and by 2009 the lake was 10 inches higher than it was before the outlet began operation.

They neglect to mention that State Engineer Dale Frink made deliberately false statements regarding the operation and efficacy of the outlet in his August 30, 2002, application for a North Dakota Pollution Discharge Elimination System permit for the project, or that the Department of Health knew the statements were false but approved the permit anyway.

The statement that, "More than $800 million of State and Federal funds have been spent in recent years on storing more water in the upper basin, raising and protecting infrastructure, and building an outlet" is seriously misleading. Most of the $800 million that have been spent dealing with the rising level of Devils Lake have been Federal taxpayer funds. From 1996 to 1999, while inflows to Devils Lake were averaging 317,000 acre-feet per year, the State spent $3.5 million annually to store an average of only 17,345 acre-feet of water per year. By 2009, when record inflows occurred to Devils Lake, the State's upper basin water storage program was down 769 acre-feet.

Dwelle, Sando and Glatt also neglect to mention the $1.5 million U.S. taxpayer dollars that the State squandered on an experimental irrigation project to utilize water in the upper basin that anyone with a $4.95 calculator could see would be worthless in lowering the lake.

They ignore the contribution of the drainage of 358,000 acres of wetlands in the Upper Devils Lake Basin—condoned and frequently promoted by the State engineer—to the rise of Devils Lake. Because wetlands in the Devils Lake Basin have the capacity to store an average of 1.7 feet of water and because the area had been in a drought for 4 years, 623,500 acre-feet of storage were no longer available as a result of wetland drainage when high levels of precipitation hit the area in 1993. The drainage of those 358,000 acres of wetlands has reduced the net loss of water in the Upper Basin through evaporation by another 239,000 acre-feet per year, indicating that as much as 75 percent of the inflows from 1993 to 1999—and 40 percent of the record inflows in 2009—were the result of the loss of evaporation capacity from drained wetlands.

They say that Devils Lake is "within just 8 feet of an uncontrolled release of the poorest quality, high-sulfate water from the east end," but they neglect to mention that it would take another 1.9 million acre-feet of water to raise Devils Lake to its natural overflow elevation of 1,459 feet, and by that time, evaporation would be removing over 700,000 acre-feet per year—seven times what the outlet operating at 250 cubic feet per second for 7 months would remove. They also do not mention that it would take 6 years for the outlet operating at 250 cfs just to remove last spring's inflows.

They claim that their objective is to avoid a catastrophic uncontrolled overflow from Devils Lake, but by not taking action to prevent the city of Devils Lake from lowering the natural outlet to 1,458 feet, they have actually doubled the chance (from 3.2 to 6.1 percent) of a major uncontrolled overflow (where the discharge would exceed those of the State's 250 cfs outlet by another 50 cfs) to the Sheyenne River within 10 years. Lowering the outlet to 1,458 feet means that an additional 269,000 acre-feet of poor quality Devils Lake water would be discharged initially into the Sheyenne River as a result of lost storage if the lake should rise to its overflow elevation, and the discharge would be increased by 23,000 acre-feet every year as a result of lost evaporation from the lake because of its smaller surface area.

They claim that the proposed increase of the sulfate limit in the Sheyenne River to 750 parts per million "is protective of aquatic life, as well as recreational and agricultural uses," but they ignore the numerous serious adverse impacts to aquatic life and recreational and agricultural use of the Sheyenne River identified by the U.S. Army Corps of Engineers for an outlet constrained by a much lower 300 ppm sulfate limit in the Sheyenne River.

They neglect to mention that data from the State Water Commission show that the 450 ppm sulfate limit originally established by the Department of Health for the Sheyenne River was never reached in the area downstream from the outlet before operation of the outlet began. Nor do they mention that the department's own regulations require it to maintain water quality in streams when it is better than the established standards.

They say that the awarding of $12 million to incorporate reverse osmosis in Valley City's new water treatment plant in order to remove sulfates and other minerals "is a clear signal from the State that the interests of Valley City are important and

will be protected." They do not mention that the reason a reverse osmosis system is necessary is to treat the increased levels of sulfates and other minerals from the Devils Lake outlet. Nor do they mention that the Corps of Engineers has determined that operation of an outlet constrained by a much lower 300 ppm sulfate limit in the Sheyenne River would increase downstream water treatment costs by $1.7 to $3.3 million annually. Governor John Hoeven appointed the administrator of the Health Department and, as chairman of the State Water Commission, he was instrumental in appointing the State engineer and is responsible for oversight of the State engineer and his staff. It is time for State officials to start dealing responsibly and truthfully with the problem of rising water levels at Devils Lake.

GARY PEARSON,
Jamestown, North Dakota.

[From the Times-Record, February 2, 2010]

"SIGN OF HOPE: DORGAN SPEAKS ON DEVILS LAKE"

For the first time since July, there's hope that the imminent increase of chemical-laden Devils Lake waters into the Sheyenne River might be stopped.

In a conference call with news media last week, Senator Byron Dorgan said he wanted to examine effects of Devils Lake water on downstream communities, including Fargo and Valley City. Since July, when the North Dakota Department of Health allowed higher sulfate levels into the Sheyenne, it's the first time a State leader has talked publicly about concerns over the issue. This is big news.

"I am not interested in transferring the problems from one region of our State to another," Dorgan said, as reported in The Forum of Fargo-Moorhead.

The sulfate level threatens the health of residents in Valley City, which gets its drinking water from the Sheyenne. Indeed, the sulfates put at risk all who rely on the river for farming, recreation or living.

And at little gain. The State has been installing pumps at Devils Lake to increase the flow into the Sheyenne from 100 to 250 cubic feet per second. At the higher rate, only 6 inches of water will come off the lake a year, according to Dave Glatt of the Health Department. Unless something is done, the pumps will start up this summer.

Glatt doesn't care that Valley City and other communities are at risk. Neither, apparently, does Governor John Hoeven, who heads the State Water Commission and approved the increased levels.

Other chemicals, which the State doesn't measure—including arsenic—will flow with the sulfates. The threat to the public is clear.

And yet until Dorgan spoke up, no State official had said anything. Not even a petition signed by 700 Valley City residents last fall calling for a study of the increased chemicals' effects generated a word from the Health Department or the State Water Commission. Where is Hoeven?

We hope Dorgan can do something. A yet-to-be-installed reverse osmosis water system in Valley City hardly justifies ruining a river.

The Senator will host a field hearing of the Senate's Subcommittee on Energy and Water Development on February 19. As The Forum reported, the meeting will look at the release of water from Devils Lake on downstream communities.

The first thing that should be done is an independent agency should conduct a comprehensive assessment on the effects of sulfate and other chemicals in the river. That's the right thing to do.

LEE MORRIS, NEWS EDITOR,
Times-Record, Valley City, North Dakota.

[From the Times-Record, January 25, 2010]

INCREASED RIVER FLOW NEEDS STUDY

Lee Morris' editorial in the Valley City Times Record on January 8 related to the increased sulfate levels in the Sheyenne River was comprehensive and accurate. Valley City is a lovely town and we must all work to protect it and its residents. Increased flows in the river increase the risk of flooding and cause health concerns.

The North Dakota Department of Health is holding a hearing on February 17 on increasing the flow out of Devils Lake thereby increasing the sulfate levels in our river. They will decide on the allowable sulfate level. The State Water Commission

will decide on how much water is allowed to flow out of Devils Lake into the Sheyenne River.

Before any water is allowed to flow from Devils Lake into the Sheyenne River from either the east or the west end, a comprehensive study, including an environmental impact study, and expert hydrological assessment must be done by an external agency (i.e., an organization not connected to the State of North Dakota). Over 700 people in Valley City signed such a petition with signatures collected in a very few days. We hope our State agencies will listen.

SHARON BUHR,
Valley City, North Dakota.

[From the Times-Record February 4, 2010]

DEVILS LAKE STUDY MUST COME FIRST

It was somewhat heartening to read the article in The Forum on January 29 quoting Senator Byron Dorgan, D-N.D., in regard to flooding in the Devils Lake basin: ". . . I have always insisted, I am not interested in transferring the problems from one region of our state to another."

I wish Governor John Hoeven and the State's water and health commissions felt the same. Particularly alarming is the fact that the Governor and his commissions continue to press for increased flows into the Sheyenne River from the Devils Lake outlet without a thorough study of the environmental impact downstream.

Obviously, such a study should have been done years ago, before the outlet was built. But it is still not too late for that to happen, especially since it has been shown that increasing flows into the Sheyenne will have very little impact on the water level in the Devils Lake Basin, but once that water, high in sulfates and other contaminants, is in Lake Ashtabula and the Sheyenne River, the damage could be significant.

The damage could be even greater than what Dave Glatt of the State Department of Health talks about: "diarrhea in small animals and intestinal problems for transient populations." For Valley City, those "transient populations" include university students, hospital and care center patients, tourists, visiting sports teams and other visitors.

And it is important to keep in mind that Devils Lake does not get its drinking water from the lake, but Valley City does take its municipal water from the Sheyenne. Important, too, is the increased flooding downstream and very likely harm from other contaminants.

We could easily be, in Dorgan's words, "transferring problems from one region to another." Let's not transfer anything until we are sure what we are doing.

KAY KRINGLIE,
Valley City, North Dakota.

[From the Times-Record, February 8, 2010]

LETTERS TO THE EDITOR

About a month ago a regional gossip column took issue with folks who opposed degrading the Sheyenne River with water from Devils Lake. The writer called those who criticized the Devils Lake outlet "a handful of prevaricators." He went on to say that the outlet has not had "any discernable effect" on the river.

No "discernable effect"? Since when does glancing at the Sheyenne River tell you about water quality?

Let's assume that one "lie" might be that Devils Lake water will degrade the Sheyenne River. If that is false, why is the North Dakota State Water Commission helping pay for a new Valley City water treatment plant, one that will help deal with the increase in sulfates from Devils Lake? Even the North Dakota Department of Health admits that water high in sulfates will taste bad, though that's merely an "aesthetic" issue, they claimed.

More serious than aesthetics are the other contaminants in Devils Lake water. Higher levels of phosphates, nitrates, chlorides and total dissolved solids, among others. Don't forget the arsenic, which will increase from about 5 milligrams per liter in the river to 12–15 mgl with Devils Lake water. Devils Lake doesn't use water from Devils Lake (See www.nd.water.usgs.gov/devilslake/science/hydrology.html).

The ground water wells from which Valley City gets its water are recharged from the Sheyenne River. What happens to the river happens to the city's drinking water.

When the outlet is pumped at 250 cfs, it could remove about 100,000 acre-feet per year from the lake. About 7–8 inches. Since Lake Ashtabula holds about 70,000 acre-feet, all of the water in the lake will be replaced every year with that from Devils Lake. Where are the studies that show the effects on the hydrology and the ecology of the river and the lake?

How many fish species will remain, how many mussels, and how that water will affect cattle? Who is responsible for the extra bank erosion and flooding that the added 250 cubic feet per second water flow will produce?

Where are the studies that describe all of these effects?

As Senator Dorgan said when he scheduled a February 19 hearing on the Devils Lake water issue, he was "not interested in transferring the problem from one region of our state to another." And that's exactly what outlet operation has done and will continue to do.

It's time to separate the prevarication from the facts so that North Dakotans can make responsible, long-term decisions about the best ways of dealing with Devils Lake water.

Taste tests prior to the river becoming contaminated with Devils Lake water don't count.

RICHARD BETTING,
Valley City, North Dakota.

Senator DORGAN. Mr. Stevens, thank you very much. I appreciate your testimony.

Let me ask a series of questions and then I will open it up for others who wish to testify.

Mr. Grubb, do you want to take a chair up here and be available for questions?

Mr. Glatt, I don't know that you're the one who asked this, but if the outlet is increased to 250 cfs, what is the period of time that you estimate it will operate during the year? If it operates during that period of time, how much will it take off the lake?

Mr. GLATT. Senator, how much it operates will depend a lot about on what the conditions are and how much additional water will be in the river. As we stand today, we are constrained by water quality standards so that will dictate how long that outlet will actually operate and at what level. I don't have exact numbers in front of me today. It could operate at 250 csf for a period of time, but that is going to be constrained about that water quality and the backdrop and not to exceed the limits that we put——

Senator DORGAN. But you must be modeling what you could achieve with this and so——

Mr. GLATT. Yes. Yes. At maximum level—that's correct. It has maximum amount of—if we went to a period of operation, ice free conditions, it's my understanding if we went to 250 cfs it would take off about 6 inches off the lake.

Senator DORGAN. But what does your modeling expect you to be able to take off the lake at this point given what you expect to be able to operate at?

Mr. GLATT. Senator, what I can tell you is from past experience and what we saw last year was about 2 inches, with the amount that was taken off would be somewhere between like 2 inches and 6 inches depending on the natural conditions and how much water is actually flowing.

Senator DORGAN. At 2 inches is at 100 cfs?

Mr. GLATT. That's at 100 cfs, that's correct.

Senator DORGAN. And you would probably average 175 cfs. You're not going to be able to run at 250. You could but you can't do that continually——

Mr. GLATT. Right

Senator DORGAN [continuing]. So you're talking 3 or 4 inches off the lake?

Mr. GLATT. That's about roughly my position, sir.

Senator DORGAN. The testimony of the mayor in Fargo, and I suspect that the concern of Valley City and probably West Fargo, about the issue of treatment is because from their perspective they anticipate that there will be higher levels of sulfates reaching their communities, which would require them to have more effective treatment.

The question I would ask, Mr. Glatt, is if you were the mayor of West Fargo or Valley City and anticipating what you are planning to do, would you want and insist on additional treatment plans for your water?

Mr. GLATT. First of all, I don't know if I could handle a mayor's job but——

Senator DORGAN. Could you put the microphone a bit closer for me.

Mr. GLATT. Sure.

Senator DORGAN. Thank you.

Mr. GLATT. What clearly, Senator, that—when we're—a couple things here. First of all, the standards for the stream, the portion that flows by West Fargo that flows into the Red River, those standards stay the same, but clearly then the water quality is going to shift. There will be a shift in the sulfate concentration. We do have systems in the State that drink significantly higher than the 450. It comes down to a policy decision what the city is willing to deal with, what they've seen in the past as ranges of sulfate concentration, and that will be a local decision. Some cities obviously have said that is not a problem for them. They can deal with the higher levels. Other ones obviously have said, no, we're concerned——

Senator DORGAN. Which cities have said the former?

Mr. GLATT. Well, that—we have cities—several of them. I can get you that list of the cities that drink significantly higher than 250, significantly higher than 500.

Senator DORGAN. On the Sheyenne?

Mr. GLATT. Not on the Sheyenne. These are public water——

Senator DORGAN. We're just talking at this point about communities on the Sheyenne.

Mr. GLATT. On the Sheyenne I have not heard that because really at this point in time the water quality hasn't impacted them to that level. We're just starting the operation of the outlet at 100 cfs.

Senator DORGAN. Let me ask you as well, I have the new National Weather Service forecast that was just released, and they're talking about the current lake level outlook surpassing something just less than a 2 foot rise this spring, slightly less than they predicted last fall, but then the fact is nobody knows. We have had 1 percent occurrences predicted, and we've met them.

Assume for a moment that Devils Lake goes from 1,450 to let's say 1,455, at that level because this is a bowl and it takes massive

amounts of water to fill the top of the bowl as does the bottom of the bowl, at 1,455, 1,456 we're getting close to an overflow, but at that point, what does a 250 cfs running on average 175 a year take off the lake? Because the lake is much broader, much larger, much more water, and my guess is you're going down from 3 inches to substantially less than that; is that correct?

Mr. GLATT. I think that essentially is correct. I would refer those questions to the State Water Commission. They deal more with the water quantity issues, and we deal with the quality, but clearly as you have more surface area you'll have more chance for evaporation and it doesn't come up quite as high. I will say we were hopeful last year for a fair amount of evaporation and that did not occur and the water level did not drop as much as we were hoping for.

Senator DORGAN. Is the State Water Commission here or someone from the State Water Commission?

Mr. FRINK. Yes.

Senator DORGAN. Let's assume that lake is at 1,455, which spreads dramatically from its current level and consumes far more acreage and so on, and you're operating an average 175 cfs. At that point how many inches are you taking off the lake in a year without them in operation?

Mr. FRINK. Senator Dorgan, I'm Dale Frink with the State Water Commission, and I think the 3 to 4 inches—or 4 inches is probably a realistic number off the lake. We know that we cannot take 250 cfs off the lake. The 2 inches we took off last year also we could have pumped another month. So even at a hundred cfs it wouldn't have been more than 2 inches maybe 2½ to 3 inches if we would just turn that on. But we—it's—what we're really dealing with is it's somewhat what I call risk management and that, you know, we're taking it off the west side. One advantage of doing that is it's a pump, which means there's a switch, and by closely monitoring the situation downstream and we do have—we have some control.

On the other hand, if we just sit and do nothing, there's a chance it's coming out the east end, and that is much more water, and you don't have certainly the control. You don't have a switch on the east end. So what we're trying to do is trying to manage a very difficult situation here, but we—we understand you just can't—we're not going to be able to turn on the 250 and just leave it.

Senator DORGAN. But my question is different than that. My question is, assuming the lake is higher than current level, it's at 1,455, which means it's much, much broader and there's far more water, I believe that in order to get to the spillover it would take about 40 percent more water than now exists in the entire lake. If that is the case, what I'm trying to understand is what is the margin of safety you get from these increases when you get a lake at 1,455? It is not 3 or 4 inches a year then. It is, I would guess, essentially less than that. I'm just trying to understand if someone has modeled that?

Mr. FRINK. We have those numbers. I don't necessarily have them, but if we could take off 4 inches now, we'd probably take off 3. One advantage we do have when it goes to 1,455 is that we're dealing with a little bit better water in Devils Lake, which means

you would probably be able to pump a little more water out and still meet those standards.

Senator DORGAN. All right. Thanks for being available. I have a couple of other questions as well, but, Bruce, if Mr. Glatt says your standards are going to remain stable in Fargo, why would you be interested and why would you need additional treatment options?

Mr. GRUBB. Well, we certainly recognize that the stream standard is not changing at West Fargo where our intake is located. That stream standard will remain at 450 milligrams per liter. I think really from Fargo's perspective it's more of a historic water quality issue on the Sheyenne River as the mayor mentioned. Historic records that we've looked at the USGS have indicated that over the past 50 years sulfate levels in the Sheyenne River have been on average in that 200 milligram per liter range. Seen occasional spikes where it's gotten up in the 300 milligram per liter range. Thus, we designed another surface water treatment plant to utilize both the Red and the Sheyenne Rivers, and we designed around that quality of water. That being said, since our plant has been in operation, we've been able to deliver to our customers a sulfate concentration that meets both the EPA secondary standard——

Senator DORGAN. Which is?

Mr. GRUBB [continuing]. Of 250 milligrams per liter. And the North Dakota Department of Health's upper recommended public standard of 250 milligrams per liter. We'd like to be able to continue participating with the Devils Lake outlet.

Senator DORGAN. Why is it important that you continue that?

Mr. GRUBB. Well, I think two things. It's the public standards. I think that most water systems not unlike ourselves are proud of our ability to deliver water quality, even though these aren't enforceable standards, that we can meet that. We'd like to continue to do that. We've established that history with our customers.

Senator DORGAN. You could not continue to do that if the sulfate levels——

Mr. GRUBB. Well, the comment was made about our use of the Sheyenne River. I mean, obviously we think it was good water planning, secure two water sources, the Red and the Sheyenne River. Over the past 5 years, we have used water from the Sheyenne exclusively a low 18 percent of the time in 2005. The very next year, the prior year 2006, we used it 55 percent of the time. So we do rely on the Sheyenne River as part of our water management and drought mitigation plan. So if we are exclusively utilizing water from the Sheyenne River and it achieved the current stream standard of 450 milligrams per liter, in order for us to be able to treat that so that the drinking water that we put out meets that 250 milligram per liter level that we prided ourselves in, we think we would need reverse osmosis treatment and that's what the mayor referred to——

Senator DORGAN. That would cost you $45 million?

Mr. GRUBB. Yes. We've looked at a sulfate concentration in the Sheyenne River that meets that current stream standard of 450 milligrams per liter. We use an average of 12 million gallons a day. We think that we'd have to treat up to 8 million gallons of that and

then we would reblend those sources back and we'd be able to achieve our 250 milligrams per liter number.

Senator DORGAN. Mr. Cameron, with respect to Valley City, your desire and determination to have a reverse osmosis treatment was predicated on what basis?

Mr. CAMERON. It's predicated basically on the worst case scenario of sulfate levels reaching the 450 and potential of a catastrophic effect of an overflow from the eastern end of the lake as well.

Senator DORGAN. Mayor Bott, help me understand something. I know there was great controversy in Devils Lake about the issue of raising the levee. I didn't quite understand that because it seemed to me that protecting the city in the face of the kinds of projections that were out there, rising lake levels, was essentially necessary. Probably not particularly today, but can you tell me as we talk about a range of issues here—I've talked about the $90 million that I was able to achieve for the Federal share of that—please describe the context of raising levees and running an outlet and doing things to try to protect roads and keep the economy working. What was the controversy in respect to raising the levee?

Mayor BOTT. I think part of the controversy was that it took place in 2008—or I should say in the summer of 2008. It took place before the prediction came out in February of last year that the lake was going to be coming up and it already came up 3 feet. We hadn't had 2 years where there was minimal rise in the lake. In fact, it was noticeable that it hadn't gone down, and hope springs eternal then, we really kind of hoped maybe this was over. Even though there were predictions that the wet cycle wasn't over but, you know, it was more than a year it was noticeable. And to raise and extend what is now the embankment to impact more property owners, to impact the community financially because you know about the local match, there was a feeling of some that if the lake isn't going to come up, why do we need to do this? Why do we need to spend the money? Why impact the property? We'll take our chances that it's done coming up. Well, unfortunately, it did come up and now we're back in that situation. So I can't speak for those people, but now they would maybe fatalistically accept that that was the right plan. It's not over yet. We still meet that potential.

Senator DORGAN. Mr. Glatt, Mr. Stevens raised the question and I think Dr. Lin raised the question of the effect of higher sulfates on productive cropland. Have you modeled that and studied that?

Mr. GLATT. We've done some work on that. Looking at what the board put together, and I don't have that information with us, but that's something that will be addressed as part of our public comment review hearing.

Senator DORGAN. Dr. Lin, you described circumstances in which productivity of land that is widely receptive to higher sulfate levels could have decreased productivity. Is that a significant concern or is it an insignificant concern?

Dr. LIN. I talked with our agriculture and soil scientist on this issue and in conducting research by using coulee water. I don't remember which coulee, but the water for testing in the Devils Lake area and therefore the results show the top layer was increased in sulfate concentrations. They're still working on their report so I cannot report to you what would be the impact on yield at this

time, but based on knowledge from soil scientists and agriculture experts the higher salt concentration will have an impact on crops, but the impact—how big the impact will be—depends on the type of crops and also the type of soil.

Senator DORGAN. Mr. Stevens, Mr. Glatt I know has held a number of regional meetings and perhaps hearings on these issues. Have you attended any of those?

Mr. STEVENS. Yes, I have.

Senator DORGAN. Have you requested information and received information that responds to some of your interests and concerns?

Mr. STEVENS. A few years back I did when I was more involved in the—this group that you mentioned. I haven't in recent years, but we do not believe in our area that enough studies have been done as to what's going to happen down the road. They're looking at the first year. If they're going to run this for a number of years, apparently, I hope it's going to settle out in Ashtabula, but if it does not, in 5 or 10 years down the road or even maybe less, how are they going to restore the damage that they've done? I mean, they're not getting enough benefit. As you mentioned earlier when this gets up and spreads out, you asked these questions on how much it's going to take off the lake and they're very iffy about it as you noted.

Senator DORGAN. Mr. Glatt, how far out are you modeling? What kind of modeling are you doing?

Mr. GLATT. Well, Senator, there's been extensive work done to—before it comes to modeling. Currently the USGS is doing additional modeling as it relates to water quality impact downstream under various scenarios and various lake levels. In addition to that we've got an extensive water quality data base working on water quality in Devils Lake and the Sheyenne prior to the outlet, during the outlet operation, and then after the outlet, and we've seen how the river responds and what we can expect and anticipate in water quality changes. That has been done and continues to be done today. So a lot of that data is available and is being done, and we do anticipate ongoing monitoring. Just because a standard's changed, doesn't mean we stop. I mean, we will continue to monitor. Monitoring goes on every 2 weeks collecting natural water quality samples. It goes on throughout the year and on top of that we still have the USGS stations that provide us 24/7 so——

Senator DORGAN. Were you with the Health Department when the outlet was built?

Mr. GLATT. Yes.

Senator DORGAN. But when the outlet was built, there were projections I know from the Water Commission and the Health Department in terms of how it would operate and then it didn't operate for some significant amount of time, and I never quite understood whether they just missed the understanding of what the sulfates would be or that they would exceed standards. Can you describe a bit of what happened at the origin of that because, there are questions about whether or not these estimates will work the way you anticipated?

Now, going back to the origin of this, what happened that caused that to be built and then not used for so long?

Mr. GLATT. Well, clearly there are a lot of different—it's a balancing act, and there's a lot of different—I won't say competing interest but—interests in how things should be operated. Those in Devils Lake area feel that as much water as you can get out as quickly as possible is the way to go, and then we have the concerns downstream.

The agency I'm involved with it's always been about water quality from day one, and I will tell you that if you go back and look through the history that outlet has been constrained, not because of engineering, because they have the ability to pump the water, but due to concerns downstream. That has been constrained in the beginning, and as we gain additional information relating water quality impacts downstream, we felt comfortable with allowing a little bit more water out, still looking at constraints and concerns downstream and that continues on today.

So from the beginning it was about the need to get water out, but also balancing that with water quality downstream. And that's my understanding how the outlet was operated. And I will say that I think it's extremely important that the Outlet Advisory Committee get more active because you need to have everybody sitting at the table downstream and for the people in Devils Lake. They all have issues here, and they need to come to the table in what makes sense as far as how the outlet should be operated. I believe it should come from them.

Senator DORGAN. Is it your notion at this point that because of the way you've operated the outlet that there are perhaps some risks but the risk of higher sulfates is offset by the release of water? Is your notion of risk relative to the interests of downstream communities what you measure in terms of your new standard in the amount of increased releases?

Mr. GLATT. Senator, clearly we're trying to find that balance and between the need to get water and the major issues that are going on with the flooding from the basin and the potential impacts downstream. What we have to defer to is what we know as the water quality from the monitoring and also what has been approved by EPA as being safe in other States. We aren't developing new standards. These are standards that have been evaluated by the Environmental Protection Agency, proposed by other States, and approved by the EPA, and so we defer to a lot of that science as well saying that this—these levels will be protective of aquatic life, recreational uses, agricultural uses that are currently established by the EPA.

Senator DORGAN. All right. Well, I have some other questions, but I want other people in the room to have an opportunity to comment.

I have not and should have introduced Roger Cockrell, who is a professional staff person on my subcommittee and is responsible for water issues, and Justin Schardin, who is my current staff member working on water issues, and both of them do excellent work and I appreciate both of them being here.

Let me ask the witnesses to remain, I have other questions as well with your permission. Let me ask those who come to the podium to state your name, and if you can, make your statements reasonably brief so that we can hear as many as possible. How

many of you would like to say something today? The rest are all Lutherans. I welcome anyone who wishes—I'm a Lutheran so I'm just kidding—pretty nonverbal. Let me welcome anyone who wishes to come up and state your name and proceed, Joe, thank you for all of your work.

STATEMENT OF JOE BELFORD, CHAIRMAN, RAMSEY COUNTY COMMISSION

Mr. BELFORD. Thank you, Senator, for holding this hearing today. I am Joe Belford. I'm chairman of the Ramsey County Commission. I have been twenty-second year of commissioner. I'm working with you, through your ears, and one of the guys who started the Lake Preservation Coalition. I was too dumb to get a job. But I do have a prepared statement and I want to begin by saying everything possible must be done to reduce the ever increasing flood damages plaguing the Devils Lake region. Increasing the capacity of the State's outlet and moving more water out of Devils Lake is critical not only for those of us living near the lake but the thousands of North Dakota citizens who live downstream along the Sheyenne and Red River.

We have no desire to reduce our flooding problems by passing them downstream, but the fact is that Devils Lake continues to rise. Consequences of a natural overflow of several thousand acre feet per second and the exact number the Corps has done is approximately 12,000 acre feet if it breaks out on its own for 96 days. That will vastly greatly impact of the increasing of the State's outlet capacity to 250 cfs per second.

Since it's beginning of the raise in 1993, Devils Lake has reached an elevation on precedence of settlement that now stands 1.6 million acre feet from reaching the natural overflow elevation. Just three more springs—spring and flows like Devils Lake saw in 2009 would lead to Devils Lake pouring through the Tolna Coulee dirty water four times higher in sulfates than the State outlet, proposed of up to 24 times greater into the Sheyenne River.

As we discuss this issue, Devils Lake has even had more moisture in the upper basin than it did at the same time in 2009. We are getting more and more worried that we could see a record lake elevation of 1,453 this year, just short about 5 feet from the overflow. At that point one bad summer storm could make this discussion moot. The time is becoming very short but designing friendly and infrastructural measure to address the natural overflow scenario.

A change in the stream down—streams down from the Sheyenne River means that the outlet will have the potential to operate at stoop capacity of 250 cfs. Every acre foot that Devils Lake outlet pumps out now is one that we do not have to worry about spilling through in the route of the Tulna Coulee where it will have no control over timing, quality, or the amount of water.

Of course, Devils Lake region already has experienced a great deal of damage from the flooding. The high water has caused $600 to $800 million of Federal work that's projected to happen this year or next year in direct expenditures. It does not include the 17 years of lost agricultural production at its peak last summer. The Devils Lake flood was about 300 square miles in 1993 when the current

flood started Devils Lake and Stump Lake covering just 84 square miles.

Everyone must understand that the next 8 feet of lake rise the entire State will be seriously affected with the boast of major roads, such as Highway 2, a diversion of rail traffic. If—in fact, Amtrak is getting ready once again now to discontinue using that route through Churches Ferry because of the high waters. As I referred before, this says nothing of the damages that would be realized downstream. In flooding in Valley City was nearly catastrophic—can't do it—this spring. Now, imagine that flooding with a thousand of cubic feet per second from the Tolna Coulee overflow.

Everyone must understand that while the economic caused the public investment resulted in Devils Lake flooding is enormous, but terrific impact upon our communities social fabric has been imaginable—unimaginable. We have already lost one whole town, Churches Ferry. The city of Minnewauken is in serious jeopardy. And without its levee system, the city of Devils Lake would have been flooded out years ago. The personal cost in dollars to relocate and the emotional challenges from being uprooted are not measured in the publics—economic cost.

My friends and neighbors have struggled in this flood for 17 years. Unlike the river flood, where flooded properties and where people must evacuate for a few days or weeks, the people around Devils Lake must evacuate for years, perhaps for a generation or more. Once the lake comes up and floods you out, you have no way of knowing when or if you will ever see your property again. I think the worse part of all this is the uncertainty of not knowing how high the Devils Lake will ultimately raise.

The changes have been proposed by the sulfate standards in the Sheyenne River above Valley City but not below. We'll still protect the human and wildlife uses but the river historically has seen. Let us not forget Devils Lake has overflowed several times since the ice age, and all of the creatures that lived in the Sheyenne River have experienced sulfate levels many times higher than the State's outlet will continue.

Also, the communication for Valley City downstream will still have their drinking water supply protected with a maximum of 450 parts of sulfates in levels seen naturally exceed without the outlet of previous years. We know the increase flows in Devils Lake outlet will cause hardship for our neighbors downstream. I wish that wasn't the case, but I believe the State is taking every due caution to keep these impacts to a minimum. Everyone must look at the big picture. If Devils Lake does not continue to rise and natural spills out to Sheyenne River—Sheyenne the impacts downstream will be many times greater than what will occur with the State's outlet. If thousands of cubic feet per seconds of water is added to Sheyenne River, then maybe what it—maybe that when Valley City and Lisbon folks have to evacuate it won't be for a few days or first few weeks, it will likely be for a few months.

I want to add to that. We talked just a little bit about agriculture. Agriculture is much more severe. In fact, I have the US—the NDSU Lake group—Lake Region College and the county agent ran some numbers for me, and this last year the agricultural loss in the Devils Lake Basin was $22,716,000 because the land was not

able to be farmed. In the compound that eventually three and a half times, it's a pretty significant amount. Now, they ran some estimates of the—since—of the last 5 years, and it's approximately $83 million with agriculture loss. You know, we've got farmers out there who have 10 feet of water on their land. We have to talk about that, but we need to talk more about that because we've not came up with a solution to help those fellows as well.

And I'm going to conclude by adding our opinion of the Fargo Forum. The Lake that spilled into the river, I'm just going to read the, say, first paragraph. The hearing today in West Fargo regarding problems associated with Devils Lake will provide useful only if downstream residents recognize it is in their best interest to endorse a controlled drawdown of the ever-rising, ever-expanding lake. The largest natural lake in North Dakota has risen 27 feet in slightly more than a decade. It has nearly tripled its surface area.

So with that, Senator, we have a lot of work ahead of us. We have to operate as a team. This thing could come out on it is own. We do not know the elevation. It might break out, but we have people at home that have been fighting this for years. Thank you for being here.

Senator DORGAN. Mr. Belford, thank you very much. We appreciate your testimony, anyone else?

STATEMENT OF MADELINE LUKE, PHYSICIAN, VALLEY CITY

Dr. LUKE. Thank you, Senator Dorgan, for allowing me to speak. Some of the figures I'll mention are rough but I believe that there are others who are concerned in Valley City that will provide by Internet better numbers if someone is interested in. Thank you for holding this hearing and allowing me to speak.

My name is Madeline Luke. I'm a physician in Valley City. I have practiced medicine and lived next to the river for 25 years. About 3 months ago 722 people who live or work in Valley City spoke, which is their right, by signing a petition requesting for a nonbiased, expert, comprehensive evaluation of the rise in Devils Lake water situation. We hoped that this would guide our State government into actions that would be effective in giving the people up there some real relief, while being cost efficient and environmentally sensitive. The petition was triggered by the State department of health requesting a change in the maximum sulfate level.

In taking the petition around I and others heard various concerns. The increased risk of flooding, decreased drinking water quality, increased water cost, increased erosion with loss of land, degradation of the beauty of the Sheyenne River. We are designated—or recreational trail I believe, Loss of wildlife and habitat, and salinization of flooded land. Yes, the State Water Commission has contributed $9.2 million on reverse osmosis plant, which will be very effective in filtering out all contaminants, but we still don't know how much it's going to cost to operate. Reverse osmosis is an energy intensive way of removing contaminants. Also we have concerns that the water could come down before the plan is completed. As Mayor Walaker mentioned Fargo also uses Sheyenne River water when the Red is insufficient or too dirty so their municipal water supply is at risk as well. Governor Hoeven made and the

State department has made comments that in other places in North Dakota the levels of sulfates are allowable by their local municipal policies. Yes, it is a policy issue, but it's also a health issue. I think that when sulfate levels get up into the higher levels there is a real quality issue and people don't drink water. I've lived all over the United States and traveled all over the world and when water quality is not good, people don't drink the water or they have to buy it. We've been blessed in Valley City that we have a good water supply. I think that most people in North Dakota feel that is one of the advantages of living here.

None of the other issues that people have concerns about have been addressed. The signers are not insensitive to the impact of the high water on people living around the lake but more important finding the cause of the high water and addressing it instead of just sending it downstream with its attendant effects.

The State government has talked about handling the Devils Lake situation in three ways; infrastructure protection, removal of water via an outlet, and upper basin management.

Roads, highways, and the city of Devils Lake have been protected by mostly Federal funds totaling about $800 million and the same amount is contemplated for the Fargo diversion. This does not solve the problem though, it just buys time.

Earlier this year—earlier North Dakota constructed an outlet costing $28 million and now wants to add another set of pumps at $16.2 million and it takes about $250,000 a year to operate. Unlike the Pelican Lake outlet that the Army Corporation proposed in 2003 they didn't plan on any money for mitigation. And as a side as a physician I find it irritating that a lot of this money has come from State tobacco money. Our population is aging. Money from the tobacco settlement issue is for health care, not for water projects.

So what do we get for this money? We must keep in mind that evaporation can take up to 30 inches per year. In June 2003 the State Water Commission engineers stated that a 100 cfs outlet would remove 2 to 4 inches yearly. In 2005 they said they could take out 4 inches in 7 months. In reality a bit over .1 inches was removed from 2005 to 2008. Now the State engineer says that 250 cfs outlet will remove over 6 inches annually if it were to operate continuously over 5.5 months. How reliable is this estimate? Consider the water from the west bay, which is better quality water, is 6 to 700 milligrams per liter sulfates. Operation of the outlet at 250 cfs would replace the 69,000 acre foot volume at the top of Ashtabula in 4.2 months. Once the 450 milligrams per liter level is reached in Ashtabula, further flows would be limited again as the sulfate limit is still 450 milligrams per liter in the lower Sheyenne. That would be after the first drop, the levels would flow from there. I don't think there's any way that you can get from 4—750 to 450 in .1 mile. This is a simplification, the numbers may be rough, but emphasizes the importance of doing a thorough hydrological evaluation. On the negative side, the Corps cited the following downstream effects for a 300 cfs outlet from Pelican Lake, which is actually cleaner water.

A 15 percent increase in sodium, chloride and sulfate in the Sheyenne, over 15 percent increase in chloride, nitrates, phosphorus, sodium, sulfates in the Red River, increased mercury in the

Red River. Possible increase methyl mercury, a potent neurotoxin, in Lake Ashtabula and that goes to Dr. Wei Lin's comments about usual recreation.

Five to ten fold increase in summer/fall flows through the Sheyenne causing an increase in erosion, sedimentation, and flood risk. And, again, that goes back to 2002, I was there. We had no warning. Valley City was a mess.

Increasing ground water affecting access to the river, tree survival, increasing soil salinity in 6,300 acres along the Sheyenne, and soil salinization on 430 acres irrigated along the Sheyenne, the risk of biota transfer. I should comment that the Corps project had a sand filter that was designed to filter out biota from Devils Lake. The present outlet has no sand filter. And has impacts on the fish hatchery.

This past fall, the city of Devils Lake cleaned out 1 foot of sediment at the Tolna Coulee and reportedly plans on taking 4 more feet out. This drops the natural overflow of the lake from 1,459 to 1,454. This action actually increases the risk of uncontrolled flow of the worst qualities of Devils Lake water into the Sheyenne River and that's the very eventuality the west bay outlet was supposed to protect us from. Furthermore, I don't see any modeling that shows how that water will come down should it overflow naturally. Actions which will lower the natural overflow need to be stopped immediately and the State has not commented on that.

As a physician I'm always amazed at how well the human body can adapt to severe stresses as long as there's time for healing. I think of the natural world in this manner as well. I believe that the Devils Lake basin has been subjected to numerous amounts of water coming in from many years and I think you're seeing the reflection of that now. I believe that the constant flow of poor quality Devils Lake water will cause irreparable damage to the Sheyenne without significantly altering the situation in Devils Lake.

Upper basin storage has never been instituted in a meaningful fashion. Less than 1,000 acres are in easement presently. The lake is currently about 134,000 acres. A 100 cfs outlet could take up to 40,000 acre feet annually. The 250 cfs outlet could take up to 100,000 acre feet and operate continuously. The Devils Lake upper basin storage evaluation of 2001 states that drained wetlands could contain 132,000 acres of water. The authors themselves state that this is an underestimation and figures of 250,000 to 358,000 acres have been stated by the Fish and Wildlife service. The recent LIDAR flight authorized by you will be an invaluable tool in locating and qualifying wetlands. Wetland restoration has no bad downstream effects; wetlands are crucial to improving wildlife habitat, and recharging groundwater supplies.

I would ask the subcommittee to use its influences and resources to ensure that an expert, nonbiased study be done to address the Devils Lake situation and that further actions be guided by such a study. Furthermore, while the study is underway, the subcommittee uses its influences and resources to institute even this winter an upper basin storage which is fair and accessible to the farmer.

PREPARED STATEMENT

I recently heard that the Emergency Rule has been delayed until August. The lake is getting better every year. The lake rises and it becomes that much more difficult to get water off and that is why I ask for the initiation of upper basin storage this year. Thank you.

[The statement follows:]

PREPARED STATEMENT OF MADELINE LUKE

Senator Dorgan, thank you for holding this hearing and allowing me to speak. About 3 months ago 722 people who live or work in VC spoke by signing a petition requesting a non biased, expert, comprehensive evaluation of the rising Devils Lake water. We hoped this would guide our State government into actions that would be effective in giving the people up there real relief while being cost efficient and environmentally sensitive. The petition was triggered by the State of North Dakota requesting a change in maximum sulfate level in the Sheyenne from 450 to 750 mg/liter in order to increase the flow of water from the West Bay of Devils Lake to the Sheyenne River from 100 to 250 CFS.

I heard various concerns: increased risk of flooding, decreased drinking water quality, increased water costs, increased erosion with loss of land, degradation of the beauty of the Sheyenne, loss of wildlife habitat, salinization of flooded land. Yes, the State Water Commission is contributing $9.2 million toward a reverse osmosis plant which will be very effective in filtering out all contaminants, but we still do not know how much it will cost to operate, nor do we know if it will be completed before the higher flows occur. Fargo also uses Sheyenne River water when the Red is too dirty, so their municipal water supply is at risk as well.

None of the other issues have been addressed. The signers were not insensitive to the impact of the high water on people living around the lake, but thought it quite reasonable to find out the cause of the high water and addressing it instead of just sending it downstream with its attendant effects.

The State government has talked about handling the Devils Lake situation in 3 ways—infrastructure protection, removal of water via an outlet and upper basin management.

Roads, highways and the town of Devils Lake have been protected by mostly Federal funds, totaling about $800 million—the same amount as contemplated for the Fargo diversion. This does not solve the problem, just buys time.

The State of North Dakota constructed an outlet costing $28 million, wants to add another set of pumps at $16.2 million which takes $250,000/year to operate. Unlike the Pelican Lake, outlet the Army Corps of Engineers proposed in 2003, the State has no money for mitigation of downstream effects. What do we get for this? Please keep in mind that evaporation can take off up 30 inches/year. In June 2003, the State Water Commission engineers stated a 100 cfs outlet would remove 2–4 inches yearly. In 2005, they said they could take off 4 inches in 7 months. In reality, a bit over .1 inches was removed from 2005–2008. Now, the State engineers say that a 250 cfs flow will remove over 6 inches annually if it were to operate continuously over 5.5 months. How reliable is this estimate?

Water from the West Bay is 600–700 mg/liter sulfates. Operation of the outlet at 250 cfs would replace the 69,000 acre foot volume at the top of Ashtabula in 4.2 months. Once the 450 mg/liter level is reached in Ashtabula, further flows would be limited again as the sulfate limit is still 450 mg/liter in the lower Sheyenne. This is a simplification but emphasizes the importance of doing a thorough hydrological evaluation.

On the negative side, the Corps cited the following downstream effects for a 300 cfs outlet from Pelican Lake which is cleaner water than the West Bay water.

—Over 15 percent increase in sodium, chloride and sulfate in the Sheyenne, over 15 percent increase in chloride, nitrates, phosphorus, sodium, sulfates in the Red River, increased mercury in the Red River.
—Increased methyl mercury, a potent neurotoxin, in Lake Ashtabula.
—Five to tenfold increase in the summer/fall flows through the Sheyenne causing an increase in erosion and sedimentation, flood risk.
—Decrease in diverse and intensity of aquatic species in the Sheyenne River.
—Increasing ground water affecting access to the river, tree survival, increasing soil salinity in 6,300 acres along the Sheyenne.
—Soil salinization on 430 acres irrigated along the Sheyenne.
—Risk of biota transfer.

—Effects on Valley City Fish Hatchery: Increased TDS may have effects on fish rearing, increased corrosion of iron pipes, affect ability to drain rearing ponds.

This past fall, The city of Devils Lake cleaned out 1 foot of sediment at Tolna coulee and reportedly plans on taking 4 more feet out. This drops the overflow of the lake from 1,459 to 1,454 feet. This action increases the risk of uncontrolled flow of the worst quality Devils Lake water into the Sheyenne, the very eventuality the West Bay outlet was supposed to protect us from. Actions which will lower the natural outflow need to be stopped immediately.

As a physician, I am always amazed at how well the human body can adapt to severe stresses as long as there is time for healing. I think of the natural world in this manner as well. I believe that the constant, chronic flow of Devils Lake water will cause irreparable damage to the Sheyenne without significantly altering the situation in Devils Lake.

Upper basin storage has never been instituted in a meaningful fashion. Less than 1,000 acres are in easement presently. The lake is currently about 134,000 acres. A 100 cfs outflow could take up to 40,000 acre feet annually, a 250 cfs outlet could take up to 100,000 acre feet. The DL upper basin storage evaluation of 2001 states that drained wetlands could contain 132,729 acre feet of water. The authors state this is likely an underestimation and figures of 250,000 to 358,000 acres have been stated by the Fish and Wildlife service. The recent LIDAR flight authorized by the Senator will be an invaluable tool in locating the wetlands. Wetland restoration has no bad downstream effects; wetlands are crucial to improving wildlife habitat, and recharging groundwater supplies.

I would ask the subcommittee to use its influence and resources to ensure that an expert, non biased study be done to address the Devils Lake situation and that further actions be guided by such a study. Furthermore, while the study is underway, the subcommittee use its influence and resources to institute even this winter an upper basin storage which is fair and accessible to the farmer.

Senator DORGAN. Thank you very much, others? Yes, sir.

STATEMENT OF LEROY TRIEBOLD, VALLEY CITY

Mr. TRIEBOLD. Good morning, Senator, and other distinguished guests. My name is Leroy Triebold from Valley City, and I've made about 13 trips up there this last summer observing the Devils Lake issues and Stump Lake issues, and I think that we are closer to an uncontrolled overflow than anyone has even addressed here today.

I've got some pictures of this Tolna Coulee that shows Stump Lake back here and it's up into Coulee. Well, up into those cattails already. And another picture I have shows the shoreline of Stump Lake and the water here is only like maybe 50 or a 100 feet from this shoreline right here. And I would predict that if that level—or Stump Lake comes up about 30 inches it will be from that point, and at that time it will be up on that shoreline that is very visible all the way around Stump Lake and all the way around east Devils Lake, that tells me that that's as deep as the water gets, because for some reason it's going somewhere at that point. If it got to 1,458, there would be another shoreline up there at 8 feet higher than the water level is today.

I have this report of findings number 100 that was done by the State geologist in 1997. He was in the Coulee on March 1997, and he did a cross section of the Coulee. And it shows here that at 1,453 approximately, which would be about 3 feet above where the water level is today, there is a layer of peat and that indicates to me at one time there was a lot of vegetative growth there for many years and that created that peat and then after that sand and gravel was deposited on top of that.

Well, how is that put in there? Well, my—my theory is that it was pushed in there by either wave action or ice action in the spring or whatever, but that 4 to 5 feet of sand and gravel is defi-

nitely not suitable dike or barrier from that water to come out of Stump Lake, and if we allow that water to get up on there and then that blows out, we got 3 feet of water off Stump Lake in Devils Lake. That's the equivalent of about 500,000 acre feet of water that's going to come down the Sheyenne River.

So like I say, I was up there 13 times this summer observing that, and I don't think that anyone else in the room today has brought those issues to light like the pictures that I have in my possession could. So I want to thank you for your time.

Senator DORGAN. Will you share those photographs with us?

Mr. TRIEBOLD. Sure will.

Senator DORGAN. Okay, thank you, Mr. Triebold, others?

STATEMENT OF BOB WERKHOVEN, RETIRED DISTRICT ENGINEER, DEPARTMENT OF TRANSPORTATION, VALLEY CITY DISTRICT

Mr. WERKHOVEN. It's a pleasure to have you back in State, Senator. My name's Bob Werkhoven. I'm a retired district engineer with the DOT at Valley City District, and I could attest to what Mr. Stevens was talking about. We don't need any more water in Valley City. Last year he was using the tractor to get in and out of his farm buildings and taking care of his cattle. I was a few miles north going in and out of a home by boat, and we were sandbagging there for the better part of 2 weeks.

But I do have a couple of questions and concerns and I'm wondering about if there are any aquifers and if my memory serves me right the city of Cooperstown draws their water from an aquifer under the Sheyenne River east of Cooperstown just off of Highway 200, and I'm wondering what impact this sulfate—increase in sulfates will have in recharging that aquifer? I'm assuming that it's recharged by the Sheyenne River because the well pumps are right there. Maybe Mr. Glatt can straighten me out on that.

Then I'm always a little puzzled as I listened to him at Valley City Commission meeting Tuesday night. We were talking about the 1,000 yards downstream from the Baldhill Dam. The standard now will be 450 milligrams per liter. That's the standard. Does that mean that magically it's going to stay at that or is it going to increase? I'm convinced that the water quality of the Sheyenne River's going to change, and then we continue to talk about the Tolna Coulee. As I've been up there a few times too, not doing what Leroy was doing, I had a fishing pole in the back of my car and was up to Devils Lake, but it seems to me we built the Jamestown reservoir and earth dam. The Pipestem Dam is an earth dam. The Baldhill Dam is an earth dam with a concrete downstream face on it. I was involved with the dam west of Ellendale earth dam, and it seems to me with all the diking we ought to have a lot of expertise in that. If we're really concerned about that blowout at the Tulna Coulee, let's trench through that thing and put a clay core in there and then put a dike across it.

And I thank you for your time.

Senator DORGAN. All right. Thank you very much, anyone else?

Let me ask you, I referred to this earlier but I didn't get an answer and perhaps the water commissioner will know, what additional water will it take into the lake to overflow?

I'm not talking about any number of feet. I'm talking about the quantity of water. Would it take about 40 percent of the water that now exists, another increase of 40 percent?

Mr. FRINK. Senator Dorgan, I'm Dale Frink, I believe the number—Todd, is it 1.5 million acre feet left?

Mr. SANDO. About 1.5.

Mr. FRINK. About 1.5 million acre feet left in that 8 feet.

Senator DORGAN. Could you give me the percentage? How does that relate to the water that now exists, what percent?

Mr. FRINK. Yes. I think we're in—we're over 300—we're over 3 million. Last year we had 600,000 acre feet go into the lake, so 2½ times what we had last year. 600,000 is a lot of water. They're predicting something, you know, in the 300,000 to 400,000 acre feet this year.

Senator DORGAN. What kind of ongoing effort exists?

I'm going to make a comment. First of all, there's going to be an outlet that is operated. Water is going to leave Devils Lake. I don't think anybody in this room believes or understands that this outlet that exists is not going to release some water. The question is how much? What are the consequences, for whom?

Having said that, if you're going to move water out then the question is how do you retard water coming in? So what kind of effort is currently underway with respect to water retention in the basin in trying to prevent additional water from coming in? What efforts are underway? Who is involved in the efforts? What kind of planning exists, and so on?

Mr. FRINK. Senator, the State Water Commission is funding a program to restore wetlands. We do pay the landowners money. It is a voluntarily program I believe. You know, it isn't—we don't get as much as interest as we would like, but we do have a program we fund the restoration of some wetlands. We also—even like some of the larger lakes with water more to the previous landowners a certain amount of money each year to raise that about 6 inches each year. So it——

Senator DORGAN. Let me make a point. It seems to me if you've got a bathtub that's full and you're working on the drain to let some water out you need to work on the faucet to stop some coming in. So I'm trying to understand what you're doing with the faucet. How extensive is your program?

Mr. FRINK. We do not have the ability to force landowners at this time to flood land—to flood water on it without a significant amount of compensation, and we haven't gotten into the non-voluntary type of arrangements for wetland restoration.

Senator DORGAN. Well, I guess the question is why not? If the release of the outlet in Devils Lake moves water from the lake and increases sulfate levels and so on, whatever the consequences of that are, why would there not be at this point or moving forward some effort that is beyond voluntary with respect to the connection of the storage of water to try to protect Devils Lake?

Mr. FRINK. Well, if the legislature directs us to do that, we will.

Senator DORGAN. Have you recommended it to the legislature?

Mr. FRINK. I haven't recommended it to the legislature. I have been in discussion with several people in the basin in terms of

modification in channel A, channel A and things like that. It's a difficult situation to make it happen.

Senator DORGAN. I understand but, you know, as I said it was just about 15 months ago that I stuck $90 million in to increase that levee.

Mr. FRINK. And we stuck in about $3 million.

Senator DORGAN. That's correct. But that's on top of massive amounts of money, hundreds of millions of dollars, for raising roads and doing all these things, and I'm just asking the question. In addition today's hearing is about the drain. I understand that. How much water's going to be let out in order to try to take some pressure off the lake, but the faucet is also very important, and I'm trying to evaluate whether there's anything being done or anything planned. Does the administration here have any plans to ask the legislature for something beyond voluntary cooperation with respect to the government?

Mr. FRINK. Not that I know of.

Senator DORGAN. Do you think they should?

Mr. FRINK. Well, first of all, Devils Lake is very close to its elevation today as 1830. Devils Lake is going up and down.

Senator DORGAN. I wasn't around for it by the way——

Mr. FRINK. But it has gone up and down. It has flowed out that Stump Lake outlet before. It probably will today—or again. So to say that you can restore all of the wetlands and then solve the problem, is not true, because we know in 1830—and it's probably due to the 1825 and 1826 floods that we do have documentation of it at Winnipeg. The lake got to where it is now all by—with all the wetlands in place. Now the wetlands have been drained, and we spent a lot of Federal dollars on draining as we all know, and drain before all of our times. It does not help. And I wish they were more and more in place, but Devils Lake still has over half of the wetlands in place and so if you fly over it, there's clearly a lot of wetland storage still available and still in the Devils Lake basin. It's not like the Red River Valley where you have to find—go look for a wetland. Devils Lake has a lot of existing storage, and there is—but there is a tremendous amount of opposition of trying to go into that basin, of course, and force——

Senator DORGAN. Yes, but that would not be an excuse for not availing yourselves of part of the solution to this problem. I happen to agree with Joe and you and others—that the potential of coming over the divide naturally has devastating consequences to a lot of the downstream areas, so we want to try to prevent that. Preventing that means releasing some waters. The question is what's the impact on the community? What are the consequences?

One of the interests of this subcommittee is that as the Governor implied this morning they would welcome some financial commitment for treatment plants that the cities believe are necessary because they don't want to degrade water quality. I want to understand what are the consequences and who might be asking for money and why later on. The same is true with respect to storage. I mean, on the faucet side of this, and I understand nobody would want to have somebody come to them and say, we'd like you to store some of this water rather than let it run into the lake.

On the other hand, if you're going to do the range of things in the toolbox, why would one just take out one tool and leave another effective tool? So the question is who has studied retention capability in the upper basin that is at this point available but not yet used? Mr. Glatt, do you have any information about that or, Mr. Frink, do you?

Mr. GLATT. No.

Mr. FRINK. I've done studies back in the 1980s. Yes, there are. There are certain capabilities to store more water. Will it solve all of the problems, no, but there is like I said, I wish a lot of those wetlands that have been drained were still in place but they are not.

Senator DORGAN. Dr. Luke, you raised your hand——

Dr. LUKE. Yes.

Senator DORGAN. But you said when you started your testimony that you weren't sure of the numbers so——

Dr. LUKE. The Army Corps of Engineer did a study, did a set of analysis I think that impacted analysis taken into problem with a wet scenario, and under the wet scenario say cost benefit analysis for various options including doing infrastructure versus upper basin versus the various outlets. The basis of their analysis was a west study that was commissioned by the Corps in 2001 upper basin management came up with a very conservative figure of whatever it was I said and they said it was very conservative. They needed to compare with their pictures from 1940. So with the very conservative number of wetlands and numbers and then just restoring half of them, the cost benefit analysis was 1.2 and that is——

Senator DORGAN. But I'm interested in more than the cost benefit. I'm interested in the quantity of water to be developed, is that——

Dr. LUKE. I believe 132,000 and that's very conservative, really round. Like I said, with LIDAR you would know more.

Senator DORGAN. Well, the LIDAR is going to be an unbelievably important tool.

Dr. LUKE. Yes.

Senator DORGAN. I funded that and it is now going to be ready and available and it's going to give us very substantial capabilities here in the Valley and Devils Lake that we've never before had in terms of more storage. It's capable of being done. I mean, let me just digress for a moment to say that the LIDAR imagery has been useful in the Red River Valley as well while we were working very hard on the Fargo/Moorhead Flood Control Project. I do not think it is sufficient for the Red River Valley. It will only protect the discrete population surface. Flooding occurs in a chronic way across the valley, and I have the announcement this morning from the National Weather Service about what they expect to happen in the Red River Valley in the coming months.

What I'm very interested in doing is making certain that water retention is considered up and down the Valley for farms and small towns beyond the three major population centers. When Fargo and Moorhead is complete we will have three major flood control projects done. But I believe up and down the Valley for other areas we're going to need to have some sort of basinwide authority that

exists to do more comprehensive water retention planning. This does not exist now and in my judgment it should, and I'll be making recommendation on that. Yes, sir.

Mr. TRIEBOLD. I did make this one little point because she talked about 130,000 acre feet. That would be less than 1 foot of water on Devils Lake and Stump Lake.

Dr. LUKE. That's more than 6 inches——

Senator DORGAN. Well, let me say this. My interest and the subcommittee's interest and the interest of the Congress in this is because we've spent a boatload of money, a lot of money, and have been involved all of the years that Joe and you and the mayor and others have talked about. We've held hearing after hearing up there. We've had task forces of all the Federal agencies and joint task forces with State and local folks and Mayor Bott and you have been involved in this for a long, long, long time.

As I said when I started, I had committees coming to me to say we've got to save the lake because there's not enough water. It's going to kill us up here. It's going to hurt the economy, kill the fish, and we've got major problems and so the first committee was to try to preserve the lake to get more water there. Then, of course, the chronic flooding entwisted, and our country has very little experience except perhaps for the Great Salt Lake and now Devils Lake with lake flooding. What we have experience with is seeing a television shot of river flooding, where the river gorges and forces and takes homes and things with it and then you see very quickly and there's a calm and there's a clean up, but lake flooding that is chronic and comes and stays and is very unusual for our country to try to deal with. No one has been able to deal with this very successfully. Except I would say this, all of the money that has been spent has been spent to move structures, raise roads, and do a range of things, but it has also been very protective of the major population center. I know there's been a controversy about raising the levee, but I assume now with the most two recent forecasts that the people of Devils Lake are going to be mighty happy that that levee increase is going to exist and funding for it is all available. It does not need to be obtained later. It's all available now.

The issue of this hearing was the State's plan for this outlet. In my judgment the outlet will run. It's built. It's going operate. The question is under what conditions will it operate? What are the consequences of those conditions for others? I think my interest is in finding out with this kind of a hearing, what are the issues to be considered? What kind of additional information is necessary, Mr. Glatt, to fully understand the consequences? I think we've begun some of that accomplishment today. I am going to submit questions to a number of witnesses because there's additional information that I want to have. I know that ultimately the EPA will also be involved in raising these issues, and then as, Bruce, you indicated and others, some of the downstream cities. I assume Lisbon in addition to Valley City, West Fargo, and Fargo are the ones being involved to evaluate what this means, in terms of the kind of water we're going to provide to citizens in the future. So this has been informative for me. I hope it has been for you as well.

ADDITIONAL COMMITTEE QUESTIONS

I'm going to submit a list of additional questions and then create a committee report. I appreciate the time many of you have taken to be here today to be a part of this.

[The following questions were not asked at the hearing, but were submitted to the witnesses for response subsequent to the hearing:]

QUESTIONS SUBMITTED TO L. DAVID GLATT

QUESTIONS SUBMITTED BY BYRON L. DORGAN

Question. What will higher sulfate levels mean for animals and other biota in and near the Sheyenne River?

Answer. Based on the known natural sulfate concentrations monitored in the Sheyenne River and Devils Lake, and the toxicological expertise of the U.S. Environmental Protection Agency (EPA), the aquatic and terrestrial wildlife will be protected. The North Dakota Department of Health supportive analysis (Attachment 1) provides a scientific rationale for increased sulfate concentrations to a maximum of 750 milligrams per liter for the defined portion of the Sheyenne River. The supportive analysis uses extensive water quality monitoring results from the Sheyenne River and Devils Lake, along with the scientific expertise of the EPA, to identify environmental compound concentrations protective of designated uses. This analysis procedure, which has been used by other States and endorsed by the EPA, demonstrates that the increase of sulfate is protective of aquatic life. In fact, based on calculations from the EPA-approved formula, the department is very conservative in identifying the maximum sulfate concentration for the Sheyenne River (note graphed sulfate concentration representations in the supporting analysis (Attachment 1) and the February 25, 2010 letter from the Environmental Protection Agency Region VIII (Attachment 4)). This supportive analysis also shows that the sulfate concentration of 2,000 milligrams per liter is protective of agricultural use, including livestock watering. It is important to note that in the upper Sheyenne River at the Flora site (upstream from the Devils Lake Outlet), 42 of 565 samples taken from 2005 to July 2009 naturally exceeded 750 milligrams per liter sulfate. Sulfate concentrations gradually attenuate downstream from the outlet (Attachment 2).

Question. What impact will higher pollutant levels from Devils Lake have on agriculture along the Sheyenne River?

Answer. All constituents identified in Devils Lake are naturally occurring compounds found throughout water bodies in the State, including the Sheyenne River. It is true that the concentration of some constituents will temporarily increase in the Sheyenne River as a result of the operation of the Devils Lake Outlet, however, all will be at concentrations below established water quality standards identified for the Sheyenne River. The degree to which each constituent will increase is a function of outlet operation and natural flow and background concentrations found in the river. In any event, water discharged from the Devils Lake west outlet will not result in the exceeding of approved water quality standards for the Sheyenne River. Agriculture is one of the designated beneficial uses in this reach of the Sheyenne River. Water quality standards protective of agricultural activities have been approved by EPA and established for the Sheyenne River.

Question. What risks are posed by pollutants other than sulfates that are found in the greater amounts of water that will be coming from Devils Lake?

Answer. Our approach is to monitor the water quality in west bay of Devils Lake and then compare the results with numeric criteria found in the State water quality standards. A comparison of parameters of concern demonstrates that aquatic life is protected. These include, but are not limited to, major inorganic ions, trace metals and nutrients. Parameters of interest for municipal water use are compared to the Safe Drinking Water Act maximum contaminant level (MCL) for human consumption. The established beneficial municipal water supply uses are maintained for the Sheyenne River downstream from Baldhill Dam.

Question. How thoroughly have the risks of these extra pollutants been studied?

Answer. North Dakota water quality standards contain/delineate the numeric criteria for protection of aquatic life and the MCL for protection of human health. The standards reflect the best available science for the protection of the beneficial uses of the water. On a State level, these standards are reviewed by the North Dakota Water Pollution Control Board, the State Health Council and the public at large. The EPA must approve the North Dakota standards, thereby affirming that the numeric and narrative criteria to protect beneficial uses are maintained. The water

quality standards established for the Sheyenne River are protective of aquatic life, agriculture and human consumptive use. In addition, the department continues to maintain an extensive water quality data base reflecting the routine monitoring of the Sheyenne and Red Rivers.

Question. How far downstream have you modeled the potential effects of the rule change?

Answer. In cooperation with the North Dakota State Water Commission, the U.S. Geological Survey is modeling the Sheyenne River to its confluence with the Red River. The modeling results are preliminary and have not been released. The modeling effort involves stochastic simulation of the effects of a 250-cubic-feet-per-second discharge from the Devils Lake Outlet on sulfate concentrations in the Sheyenne River (Attachment 3). Another effort is to develop a real-time hydrodynamic and water quality model for Lake Ashtabula. The purpose of the model is to estimate the impact of discharge water from Devils Lake under various hydrologic conditions. This information will be used to address appropriate outlet operation to ensure compliance with downstream standards. The constraint that will limit the amount of water discharged is the State water quality standard specifying a maximum of 450 milligrams per liter sulfate below Baldhill Dam. More important than the modeling will be the routine water quality monitoring data collected from the Sheyenne River, Lake Ashtabula and the Red River. This data will also be used to determine changes in water quality and influence the operation plan to ensure compliance with downstream standards. In the final analysis, nothing surpasses empirical water quality data input for making informed management decisions.

Question. Will your long-term monitoring program for Lake Ashtabula include monitoring the accumulation of sulfates in the sediments of the lake and how they could affect future downstream water quality?

Answer. The water column will be monitored, and in the unlikely event a significant flux of sulfate occurs, the operating plan can be adjusted accordingly.

ATTACHMENT 1

MAXIMUM SULFATE LIMIT OF THE SHEYENNE RIVER SUPPORTING ANALYSIS

The Sheyenne River is a Class IA stream in North Dakota. The quality of the waters in this class shall be the same as the quality of a Class I stream except that treatment for municipal use may also require softening to meet the drinking water requirements of the department.

Under the proposed change, the Sheyenne River will remain a Class IA stream but a segment of the river will be subject to a different criterion for sulfate than is normally applied to Class IA streams. The proposed change allows the maximum sulfate (total) concentration of 750 mg/L (30-day arithmetic average) from the headwaters of the Sheyenne River to 0.1 miles downstream of Baldhill Dam.

The Sheyenne River sulfate concentrations are largely influenced by natural conditions. Runoff from precipitation and snow melt generally decrease sulfate concentrations whereas low flows are dominated by groundwater discharge. Groundwater is more mineralized and contains much higher sulfate concentrations.

From 2005 to present; 565 samples were taken at the Flora site. Of these 167 had a higher sulfate concentration than 450 mg/L; 80 had a higher concentration than 600 mg/L; 45 had a higher concentration than 700 mg/L; and 42 had a higher concentration than 750 mg/L.

This demonstrates that the criterion for sulfate of 450 mg/L is inappropriate because at the time the standard was established the natural background condition was not considered. There is one permitted discharger under section 402 of the Clean Water Act located on the main stem of the river upstream from the Flora site. This municipal discharger with a population of less than 2,000 has low sulfate drinking water and, therefore, has an inconsequential effect on sulfate concentrations at Flora.

There are no municipal, rural water districts, or industrial uses of the Sheyenne River from its headwaters to 0.1 miles downstream of Baldhill Dam. This department is not aware of any plans, preliminary plans or intent in using the Sheyenne River in this reach for these purposes. (Memo, D. Wayne Kern, Appendix A) The department intends to remove the municipal use designation from this reach of the river during the next triennial water quality review process.

The North Dakota State Water Commission reports there are no applications for water appropriation permits on this reach of river. An appropriation of greater than 12.5 acre feet of water requires a permit.

Agriculture use on this reach of the Sheyenne River is mostly livestock watering and a small number of irrigators. North Dakota designates Class III streams as

suitable for agriculture use but does not delineate numeric criteria to support that use. Class III streams have a maximum limit of 750 mg/L of sulfate (total) 30-day arithmetic average. The State of Illinois has numeric limits of 2,000 mg/L of sulfate for livestock watering.

North Dakota State University Extension suggests that concentration of 1,000 mg/L to 1,500 mg/L is protective for most classes of grazing livestock.

This reach of Sheyenne River is designated suitable for the propagation or protection or both of resident fish species and other aquatic biotic.

The State of Illinois developed sulfate criteria for protection of aquatic life (See Ill. Admin. Code tit. 35, § 302.208).

The Environmental Protection Agency (EPA) approved Illinois Water Quality Standards including the permissible sulfate concentrations.

The Illinois' sulfate criteria, which is located in Ill. Admin. Code tit. 35, § 302.208(h), states:

The following concentrations for sulfate must not be exceeded except in receiving waters for which mixing is allowed pursuant to section 302.102:

—At any point where water is withdrawn or accessed for purposes of livestock watering, the average of sulfate concentrations must not exceed 2,000 mg/L when measured at a representative frequency over a 30 day period.

—The results of the following equations provide sulfate water quality standards in mg/L for the specified ranges of hardness (in mg/L as $CaCO_3$) and chloride (in mg/L) and must be met at all times:

—If the hardness concentration of receiving waters is greater than or equal to 100 mg/L but less than or equal to 500 mg/L, and if the chloride concentration of waters is greater than or equal to 25 mg/L but less than or equal to 500 mg/L then: C = [1276.7 + 5.508 (hardness) − 1.457 (chloride)] *0.65 where, C = sulfate concentration

—If the hardness concentration of waters is greater than or equal to 100 mg/L but less than or equal to 500 mg/L, and if the chloride concentration of waters is greater than or equal to 5 mg/L but less than 25 mg/L, then: C = [−57.478 + 5.79 (hardness) + 54.163 (chloride)] *0.65 where C = sulfate concentration

—The following sulfate standards must be met at all times when hardness (in mg/L as $CaCO_3$) and chloride (in mg/L) concentrations other than specified in (h)(2) are present:

—If the hardness concentration of waters is less than 100 mg/L or chloride concentration of waters is less than 5 mg/L, the sulfate standard is 500 mg/L.

—If the hardness concentration of waters is greater than 500 mg/L and the chloride concentration of waters is 5 mg/L or greater, the sulfate standard is 2,000 mg/L.

—If the combination of hardness and chloride concentrations of existing waters are not reflected in subsection (h)(3)(A) or (B), the sulfate standard may be determined in a site-specific rulemaking pursuant to section 303(c) of the Federal Water Pollution Control Act of 1972 (Clean Water Act), 33 U.S.C. 1313, and Federal Regulations at 40 CFR 131.10(j)(2).

The Illinois' method for determining permissible sulfate concentrations supports our conclusion that 750 milligrams per liter sulfate (total) is not only protective but more than adequate to protect aquatic life.

Data from April 2008 to July 2009 from the Sheyenne River near Flora, Bremen, Cooperstown, below Baldhill Dam and the Devils Lake outlet were used to calculate sulfate concentrations that are protective of aquatic life (Table 1).

TABLE 1

Site	Chloride				Hardness				N	Sulfate Criterion (mg/L)	
	Min	Max	Mean	Median	Min	Max	Mean	Median		(min H & min Cl)	(min H & max Cl)
Devils Lake State Outlet	10.9	103.0	86.0	96.2	202	658	551	562	20	1106	1455
Sheyenne River Below Baldhill Dam	6.8	22.4	15.3	16.3	227	537	349	337	39	1057	1605
Sheyenne River Near Bremen	12.7	44.8	25.6	24.95	281	547	432	439	38	1467	1793
Sheyenne River Near Cooperstown	11.7	40.8	19.5	17.4	292	478	400	417	39	1473	1836
Sheyenne River Near Flora	9.6	27.2	18.8	19.25	183	565	407	417	38	988	1459

Location Map—Appendix B.

The formula found in the Illinois Water Quality Standards where chloride concentration in mg/L, and hardness concentration (in mg/L as calcium carbonate) was used to calculate the sulfate criteria. The data expressed in minimum, maximum, mean, and median concentrations unequivocally support the proposed 750 mg/L criterion for sulfate.

The formula is presented in a different way (table 2) which provides an alternative more user friendly method for determining protective aquatic life criterion. In addition to the formula and tabular method, the calculations are also provided in graphic form (Figure 1).

TABLE 2

Hardness = 500:										
Chloride	5	6	13	15	24	25	50	100	200	500
sulfate	2020	2055	2302	2372	2689	2596	2572	2525	2430	2146
Hardness = 400:										
Chloride	5	6	13	15	24	25	50	100	200	500
sulfate	1644	1679	1925	1996	2313	2238	2214	2167	2072	1788
Hardness = 300:										
Chloride	5	6	13	15	24	25	50	100	200	500
sulfate	1267	1302	1549	1619	1936	1880	1856	1809	1714	1430
Hardness = 200:										
Chloride	5	6	13	15	24	25	50	100	200	500
sulfate	891	926	1173	1243	1560	1522	1498	1451	1356	1072
Hardness = 100:										
Chloride	5	6	13	15	24	25	50	100	200	500
sulfate	515	550	796	867	1183	1164	1140	1093	998	714
Ag Use:										
sulfate	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000

If hardness is<100 mg/L or chloride is< 5 mg/L, the sulfate std = 500 mg/L.
If hardness is > 500 and chloride is > or equal to 5 mg/L then the sulfate standard is 2000 mg/L.

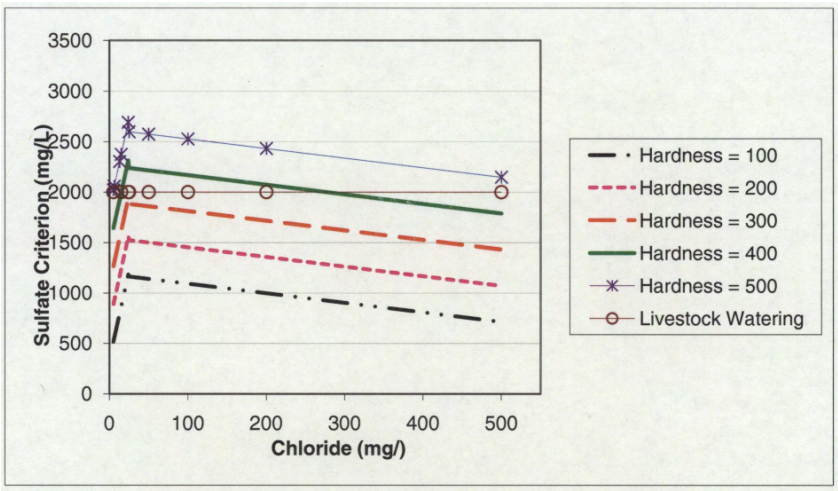


Figure 1

APPENDIX A—INTRADEPARTMENTAL MEMORANDUM

TO: L. David Glatt, P.E., Chief, Environmental Health Section.
FROM: D. Wayne Kern, P.E., Director, Division of Municipal Facilities.
RE: Use of Sheyenne River Upstream of Lake Ashtabula as a Drinking Water Source.
DATE: September 2, 2009.

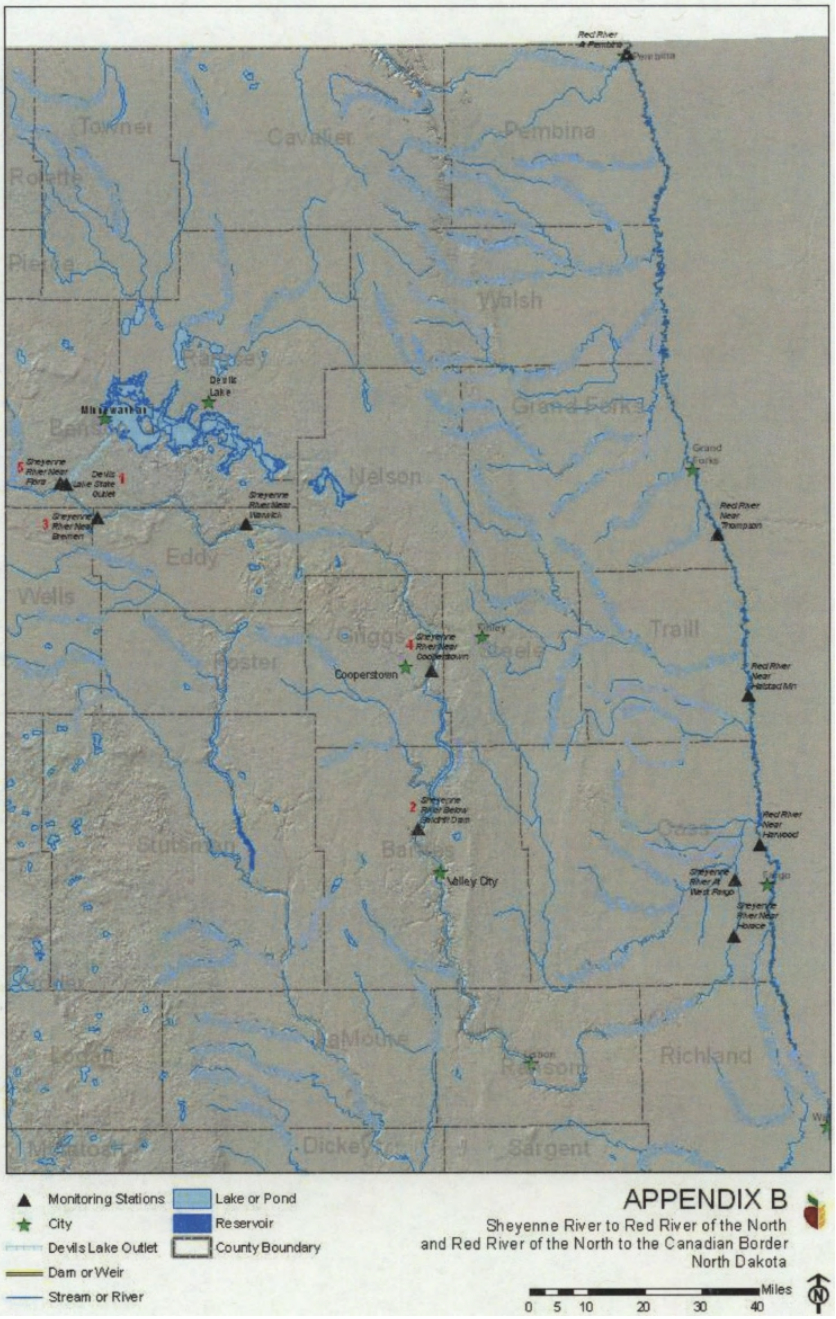
This concerns the above-referenced matter. Presently, there are no public water systems (PWSs) that use the Sheyenne River upstream of Lake Ashtabula as a drinking water source. I am also not aware of any plans on the part of PWSs to utilize this stretch of the Sheyenne River as a drinking water source.

PWSs that utilize surface water are subject to strict treatment and monitoring requirements under the Federal Safe Drinking Water Act (SDWA) and its implementing regulations. Private water supplies are not subject to the SDWA. However, whether for public or private use, surface water must undergo substantial treatment to render it safe and aesthetically acceptable for drinking water purposes.

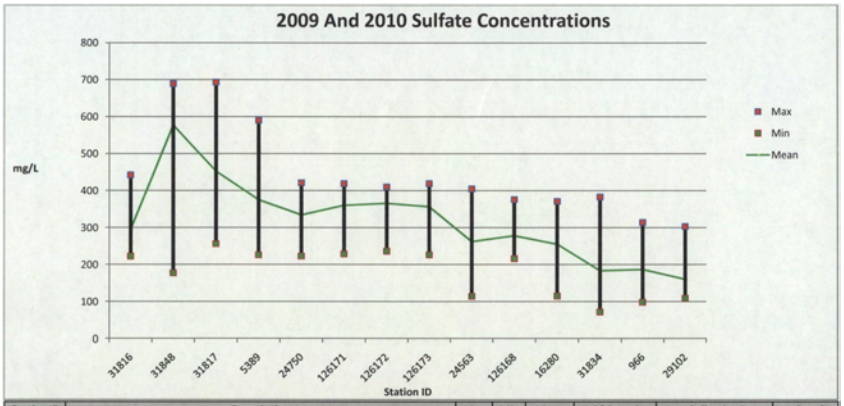
Please contact me if you have questions or need additional information on this matter.

DWK.

Location Map



ATTACHMENT 2



StationID	Description	Max	Min	Mean	# Of Samples	LastCollectionDate	LastResult
31816	Sheyenne River Near Flora	442	222	294.51	141	20-Nov-09	372
31848	Devils Lake State Outlet	689	177	576.83	114	30-Oct-09	587
31817	Sheyenne River Near Bremen	693	256	452.03	145	23-Feb-10	507
5389	Sheyenne River Near Warwick	590	226	374.97	35	23-Feb-10	230
24750	Sheyenne River Near Cooperstown	421	223	334.29	35	24-Feb-10	241
126171	Lake Ashtabula East Of Hannaford	419	229	360.41	46	26-Feb-10	229
126172	Lake Ashtabula At Sibley Crossing Bridge	410	236	365.69	48	26-Feb-10	410
126173	Lake Ashtabula Downstream Location At Ashtabula Crossing	419	226	356.32	47	26-Feb-10	276
24563	Sheyenne River Below Baldhill Dam	405	114	262.06	35	24-Feb-10	405
126168	City Of Valley City Intake	376	216	278.09	22	23-Feb-10	376
16280	Sheyenne River Near Horace	371	115	255.17	35	23-Feb-10	364
31834	Red River Near Harwood	383	71.8	183.55	26	23-Feb-10	127
966	Red River Near Halstad Mn	314	98.3	186.74	26	23-Feb-10	170
29102	Red River At Pembina	303	109	160.35	26	23-Feb-10	141

ATTACHMENT 3

STOCHASTIC SIMULATIONS OF EFFECTS OF 250 CUBIC FEET PER SECOND DEVILS LAKE OUTLET ON SULFATE CONCENTRATIONS IN THE SHEYENNE RIVER

PRESENTATION OUTLINE

Part 1 (Included in this file)

—Describe calibration and verification of ambient (without outlet) statistical flow and sulfate routing model for Sheyenne River

—Show effects of Devils Lake outlet on downstream sulfate concentrations for historical scenarios

Part 2 (In progress)

—Show potential effects of outlet for future years using stochastic simulations

—Evaluate potential adverse effects of future spills and ability of outlet to reduce or eliminate adverse effects

Part 1.—Statistical Flow and Sulfate Routing Model for Sheyenne River

Uses a 5-day time step (smoothes noise in daily data, easier to route flow and sulfate)

Calibrated and verified using flow and sulfate concentration data for 1980–2009 (homogenous climatic period)

Primary simulation locations

—05056000 Sheyenne R. nr. Warwick

—05057200 Baldhill Cr. nr. Dazey

—05057000 Sheyenne R. nr. Cooperstown

—05058000 Sheyenne R. blw. Baldhill Dam

—05058700 Sheyenne R. at Lisbon

—05059000 Sheyenne R. nr. Kindred

Secondary locations

—05055400 Sheyenne R. nr. Bremen

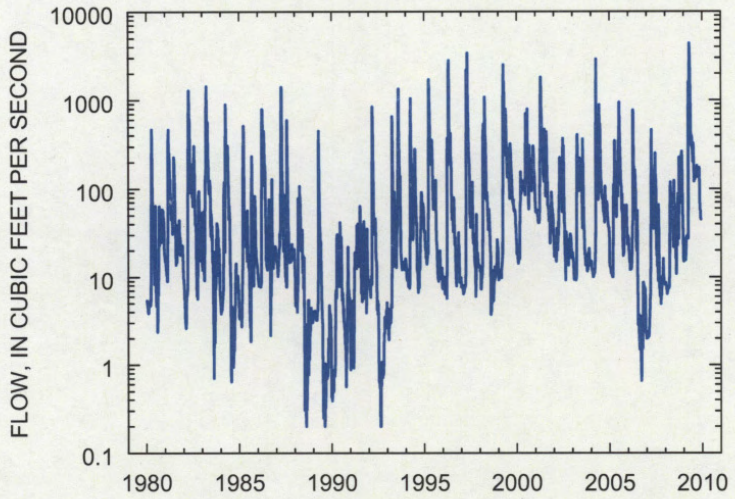
—05059300 Shey. R. abv. Div. nr. Horace

—Start with flow for Sheyenne R. nr. Warwick and Baldhill Cr. nr. Dazey (either use historical values or simulated values from stochastic model)

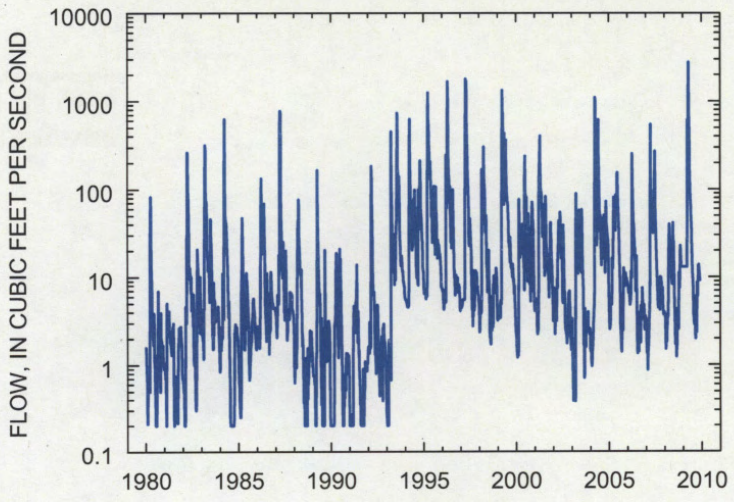
—Use flows for Warwick and Dazey to simulate sulfate concentrations for both sites
—Use flows and sulfate concentrations for Warwick and Dazey to simulate flows and sulfate concentrations for Cooperstown
—Use Cooperstown and Dazey flows and sulfate concentrations and Lake Ashtabula simulation model to simulate flows and sulfate concentrations blw. Baldhill Dam
—Use flows and sulfate concentrations blw. Baldhill Dam and estimated intervening flows and sulfate concentrations to simulate flows and sulfate concentrations at Lisbon and Kindred

Historical streamflow for Sheyenne River nr. Warwick and Baldhill Cr. Nr. Dazey

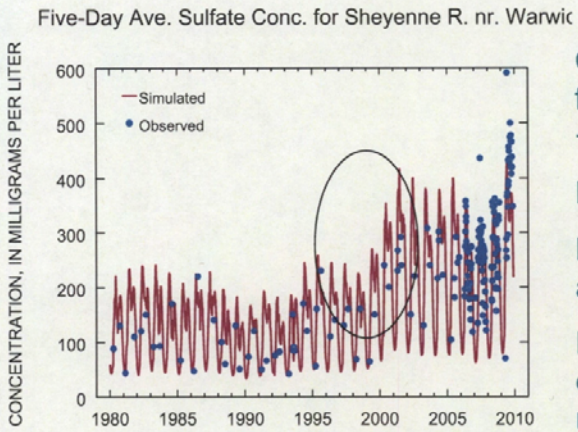
Five-Day Average Flow for Sheyenne R. nr. Warwick



Five-Day Average Flow for Baldhill Cr. nr. Dazey



Sumulated and observed sulfate conc. for Sheyenne River nr. Warwick and Baldhill Cr. nr. Dazey

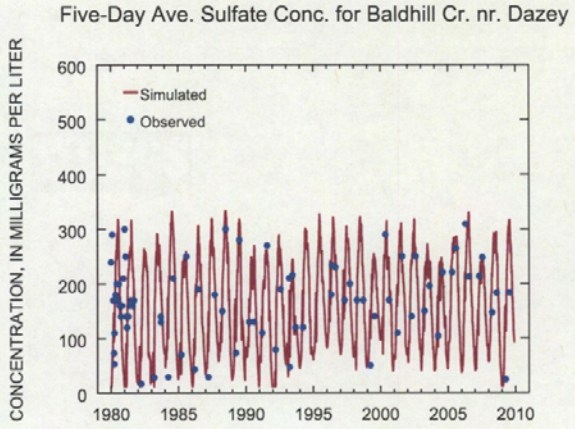


Conc~Function of flow +seasonality +trend

RSQ = 82%

Note large uptrend about 1998-2002

Points affected by outlet (2006-09) not used for calibration

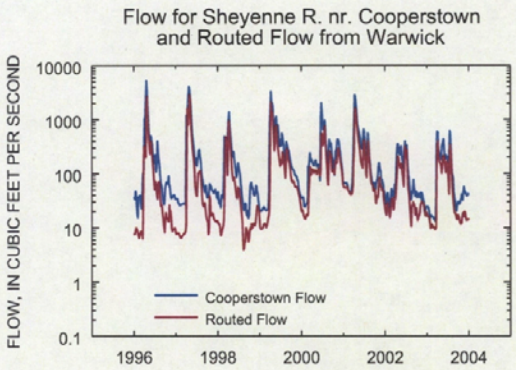


RSQ=68%

No trend

Winter ice conditions not included

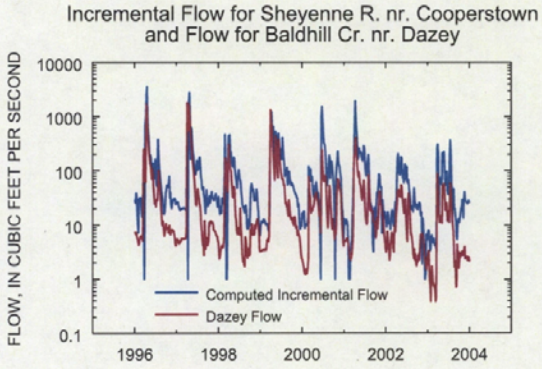
Routing flows from Warwick to Cooperstown



RTFLCOOP(t) =

0.70 FLWAR(t-1)

+ 0.30 FLWAR(t-2)



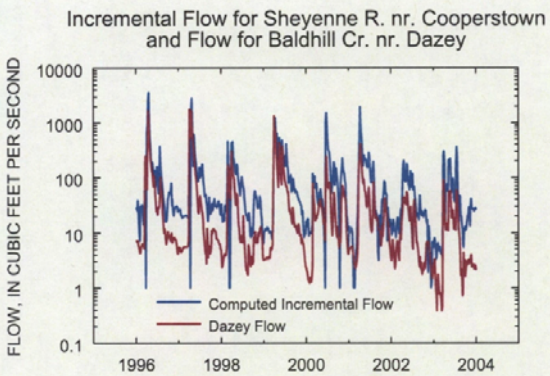
INCFLCOOP(t) =

FLCOOP(t)

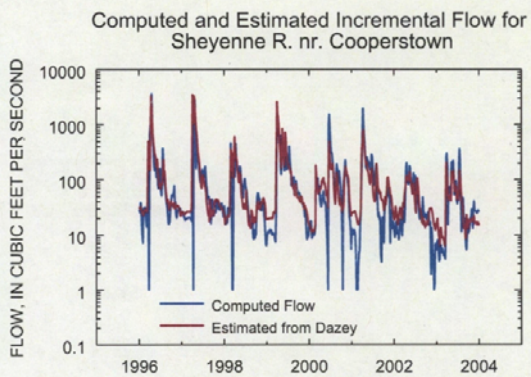
- RTFLCOOP(t)

(Note correlation with Dazey flows)

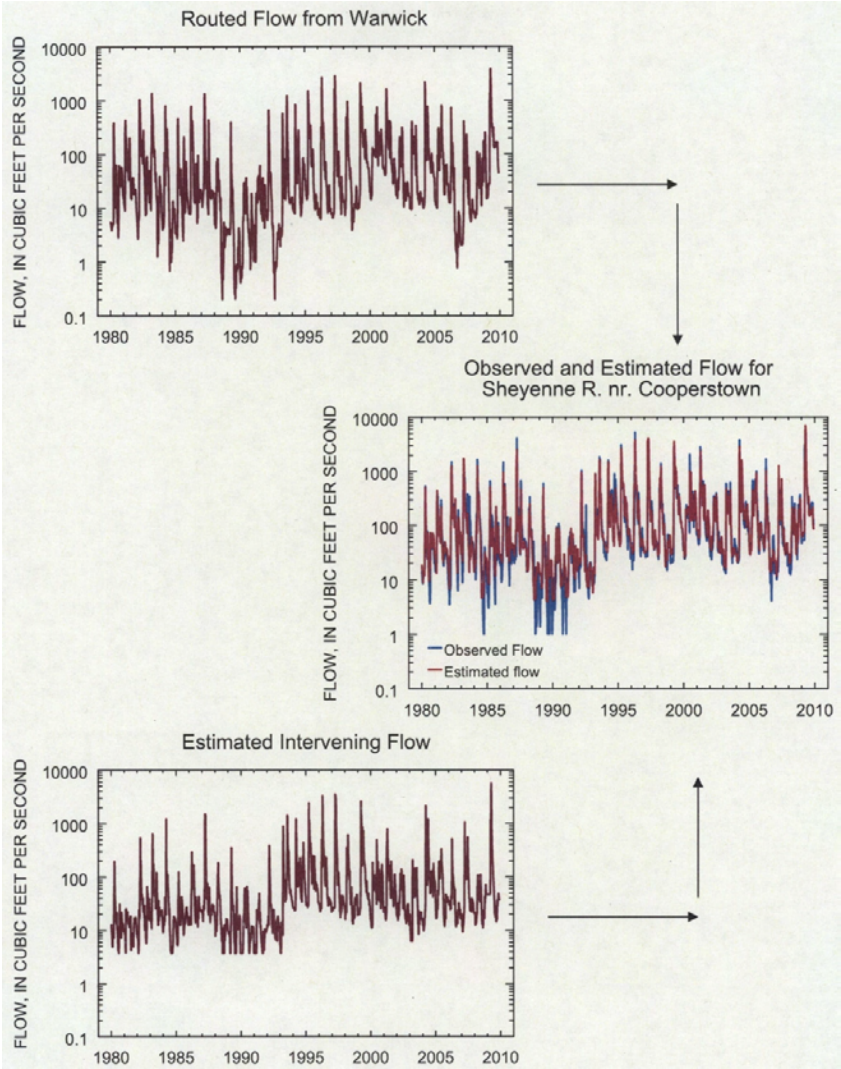
Routing flows from Warwick to Cooperstown

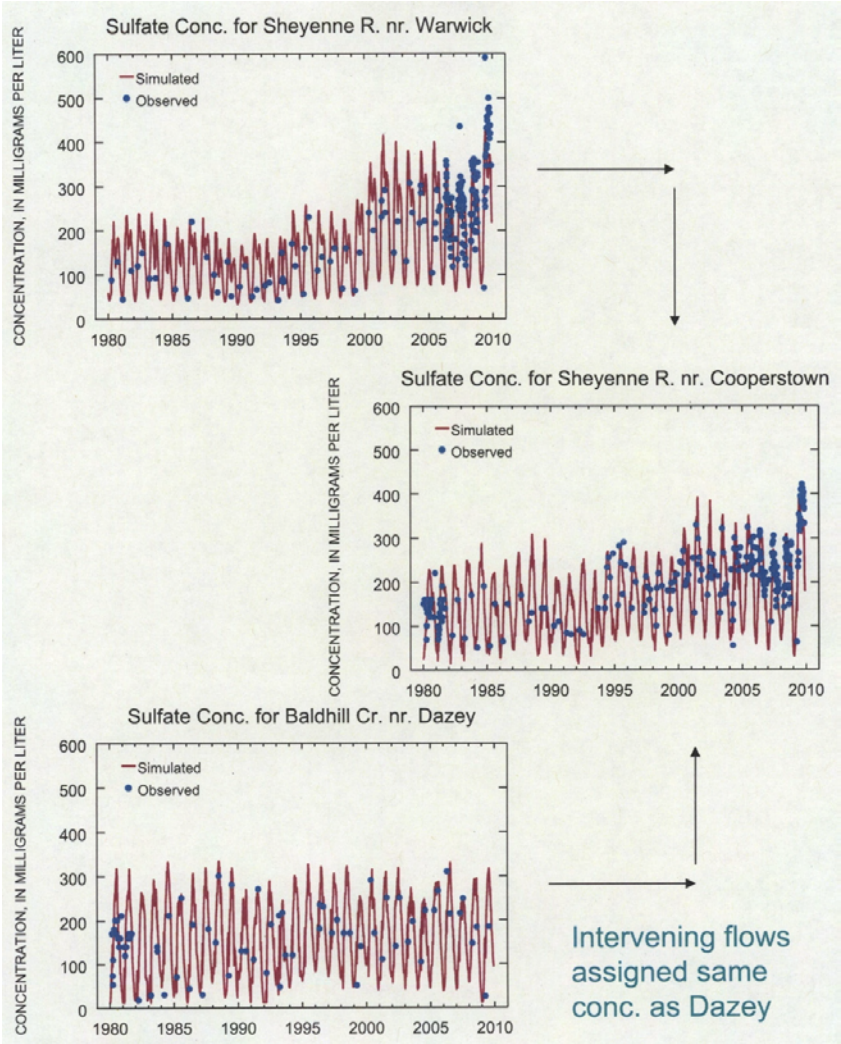


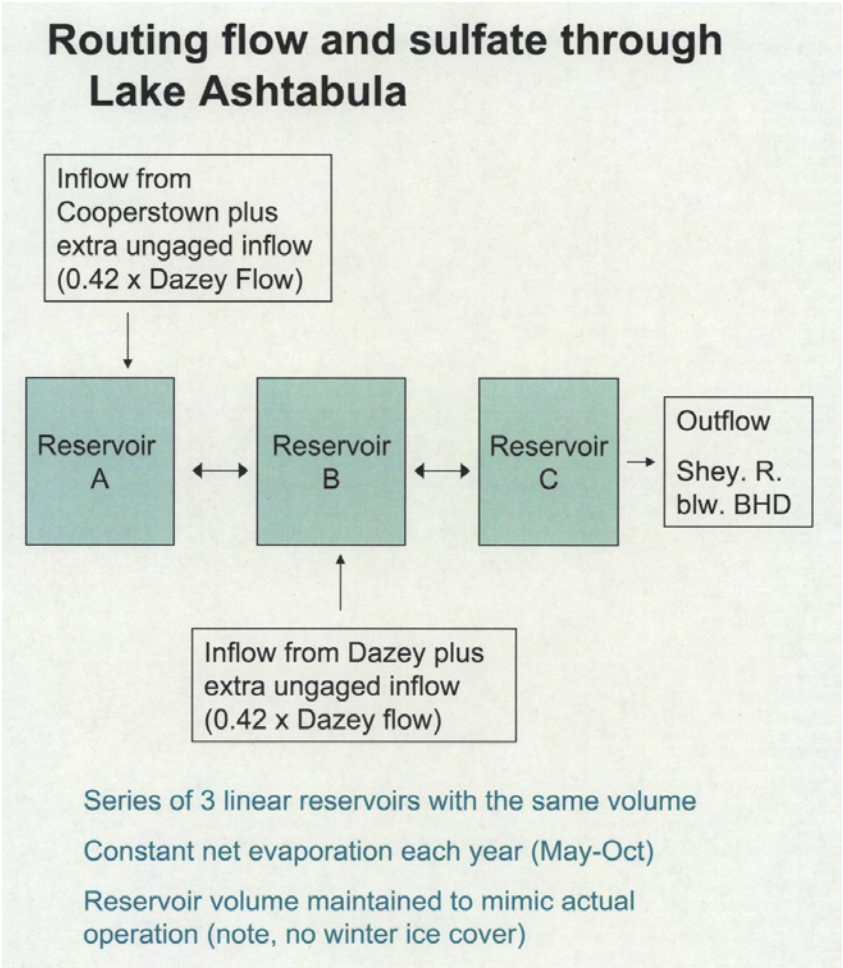
Same plot as previous slide

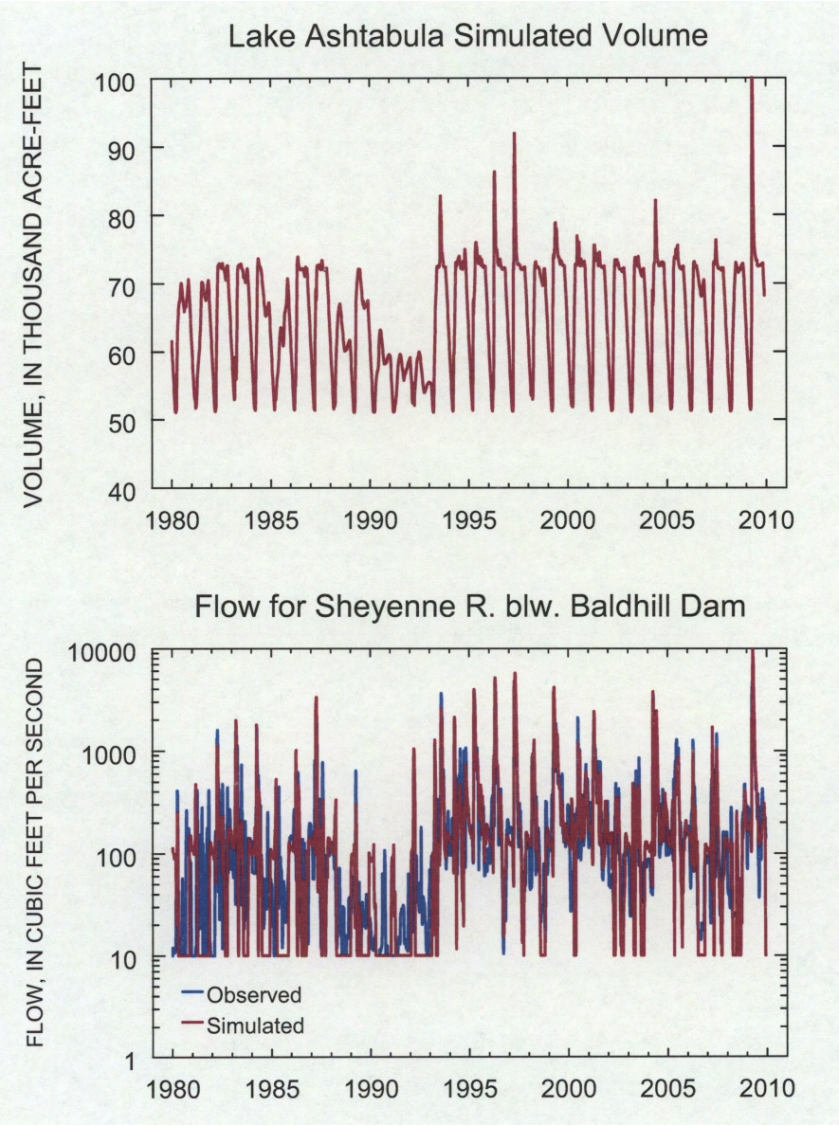


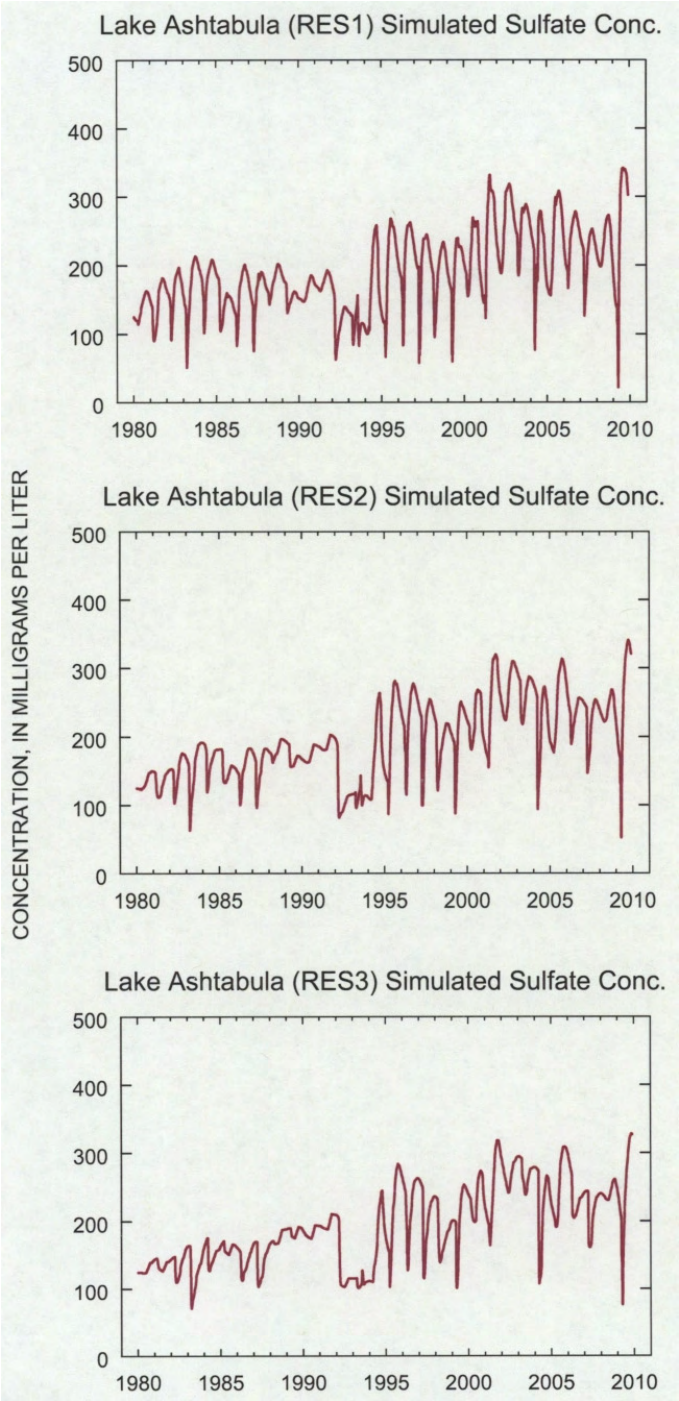
Unbiased estimate of incremental flows computed using flow from Dazey

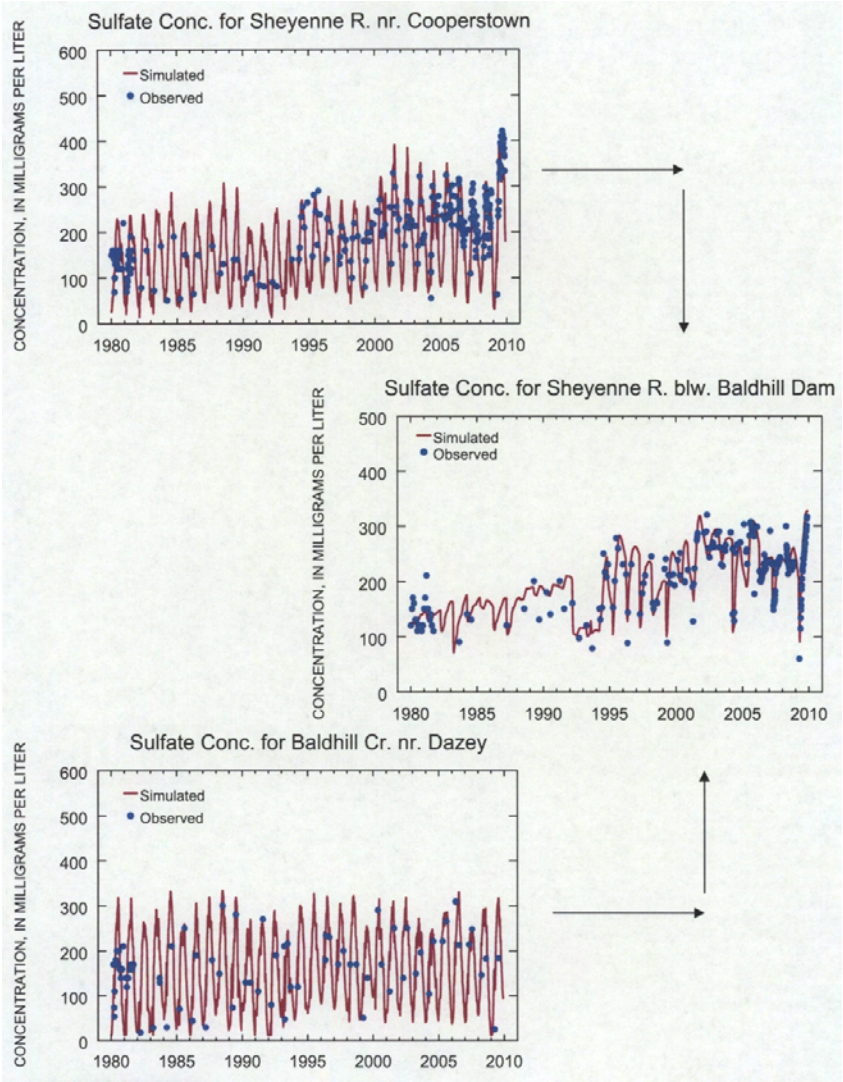

Routed Flow from Warwick
FLOW, IN CUBIC FEET PER SECOND
10000
1000
100
10
1
0.1
1980
1985
1990
1995
2000
2005
2010
Observed and Estimated Flow for
Sheyenne R. nr. Cooperstown
FLOW, IN CUBIC FEET PER SECOND
Observed Flow
Estimated flow
Estimated Intervening Flow
FLOW, IN CUBIC FEET PER SECOND

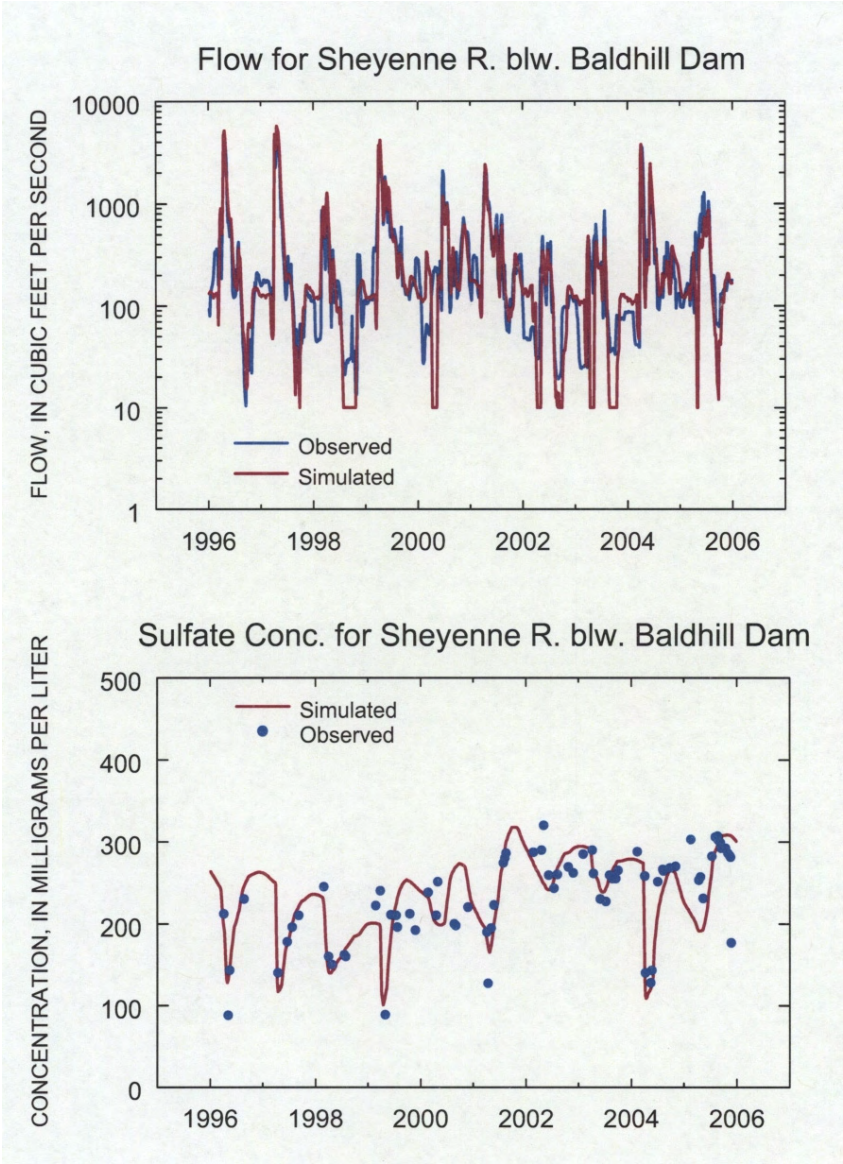

Sulfate Conc. for Sheyenne R. nr. Warwick
CONCENTRATION, IN MILLIGRAMS PER LITER
Simulated
Observed
0
100
200
300
400
500
600
1980
1985
1990
1995
2000
2005
2010
Sulfate Conc. for Sheyenne R. nr. Cooperstown
CONCENTRATION, IN MILLIGRAMS PER LITER
Simulated
Observed
Sulfate Conc. for Baldhill Cr. nr. Dazey
CONCENTRATION, IN MILLIGRAMS PER LITER
Simulated
Observed
Intervening flows
assigned same
conc. as Dazey

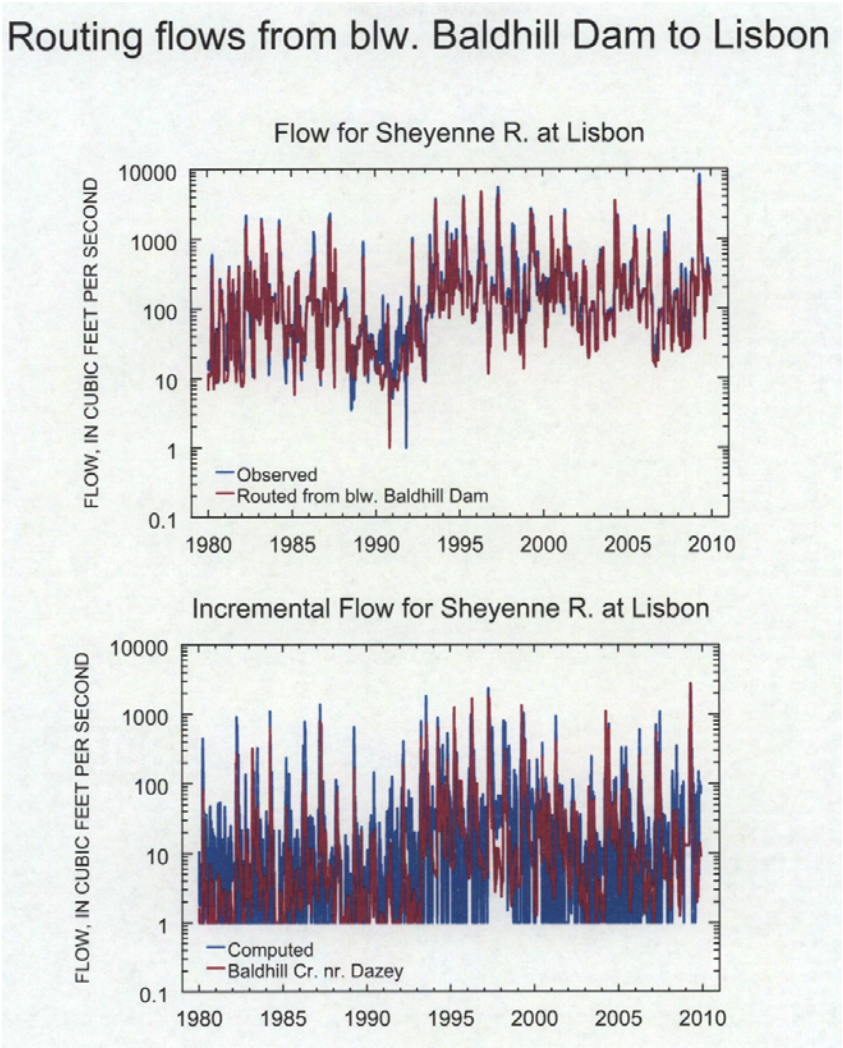

Routing flow and sulfate through Lake Ashtabula
Inflow from Cooperstown plus extra ungaged inflow (0.42 x Dazey Flow)
Reservoir A
Reservoir B
Reservoir C
Outflow
Shey. R. blw. BHD
Inflow from Dazey plus extra ungaged inflow (0.42 x Dazey flow)
Series of 3 linear reservoirs with the same volume
Constant net evaporation each year (May-Oct)
Reservoir volume maintained to mimic actual operation (note, no winter ice cover)

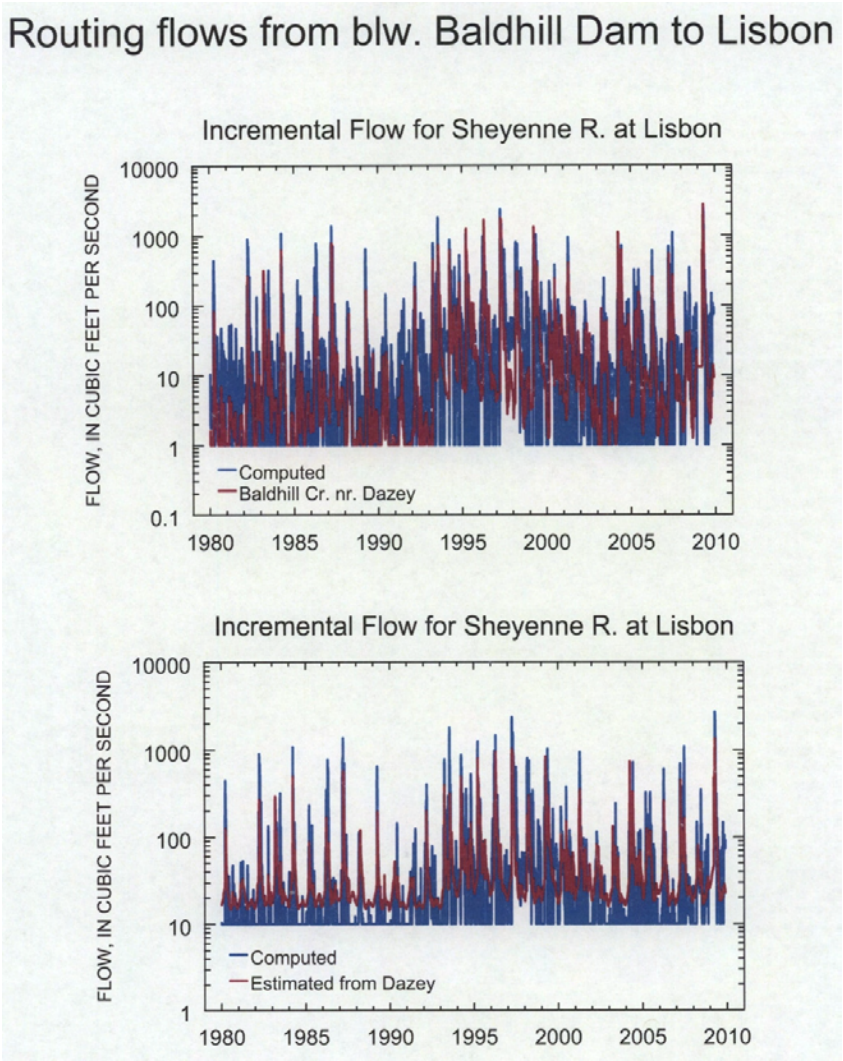

Lake Ashtabula Simulated Volume
VOLUME, IN THOUSAND ACRE-FEET
100
90
80
70
60
50
40
1980
1985
1990
1995
2000
2005
2010
Flow for Sheyenne R. blw. Baldhill Dam
FLOW, IN CUBIC FEET PER SECOND
10000
1000
100
10
1
Observed
Simulated
1980
1985
1990
1995
2000
2005
2010

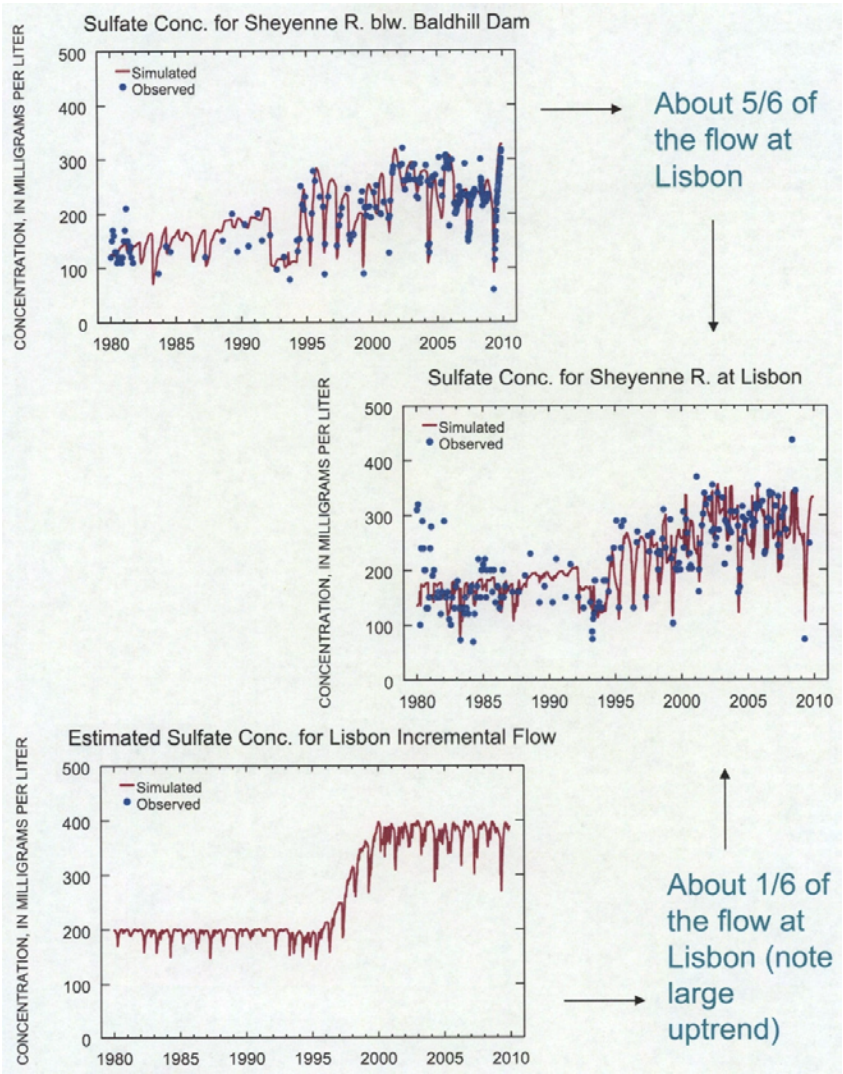

Lake Ashtabula (RES1) Simulated Sulfate Conc.
Lake Ashtabula (RES2) Simulated Sulfate Conc.
Lake Ashtabula (RES3) Simulated Sulfate Conc.
CONCENTRATION, IN MILLIGRAMS PER LITER
0
100
200
300
400
500
1980
1985
1990
1995
2000
2005
2010

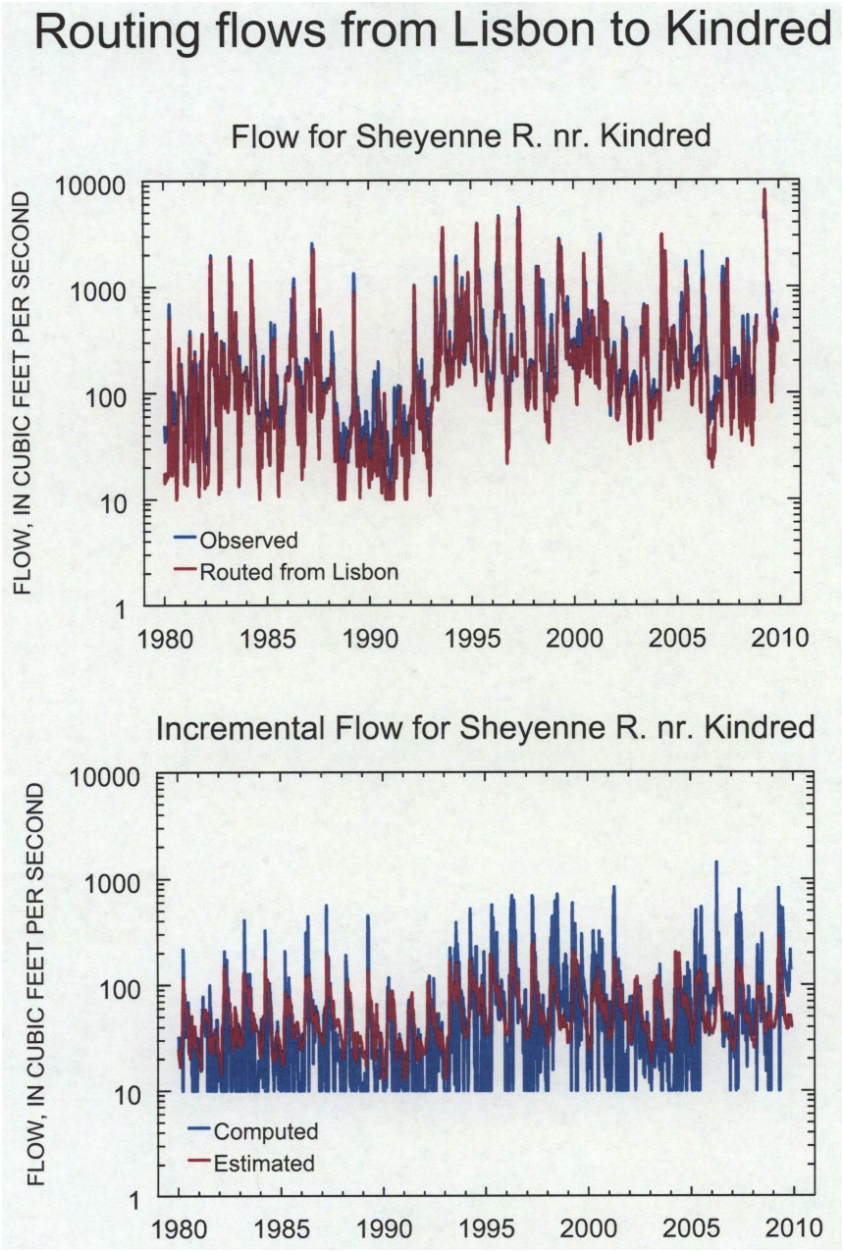

Sulfate Conc. for Sheyenne R. nr. Cooperstown
CONCENTRATION, IN MILLIGRAMS PER LITER
Simulated
Observed
0
100
200
300
400
500
600
1980
1985
1990
1995
2000
2005
2010
Sulfate Conc. for Sheyenne R. blw. Baldhill Dam
CONCENTRATION, IN MILLIGRAMS PER LITER
Simulated
Observed
0
100
200
300
400
500
1980
1985
1990
1995
2000
2005
2010
Sulfate Conc. for Baldhill Cr. nr. Dazey
CONCENTRATION, IN MILLIGRAMS PER LITER
Simulated
Observed
0
100
200
300
400
500
600
1980
1985
1990
1995
2000
2005
2010

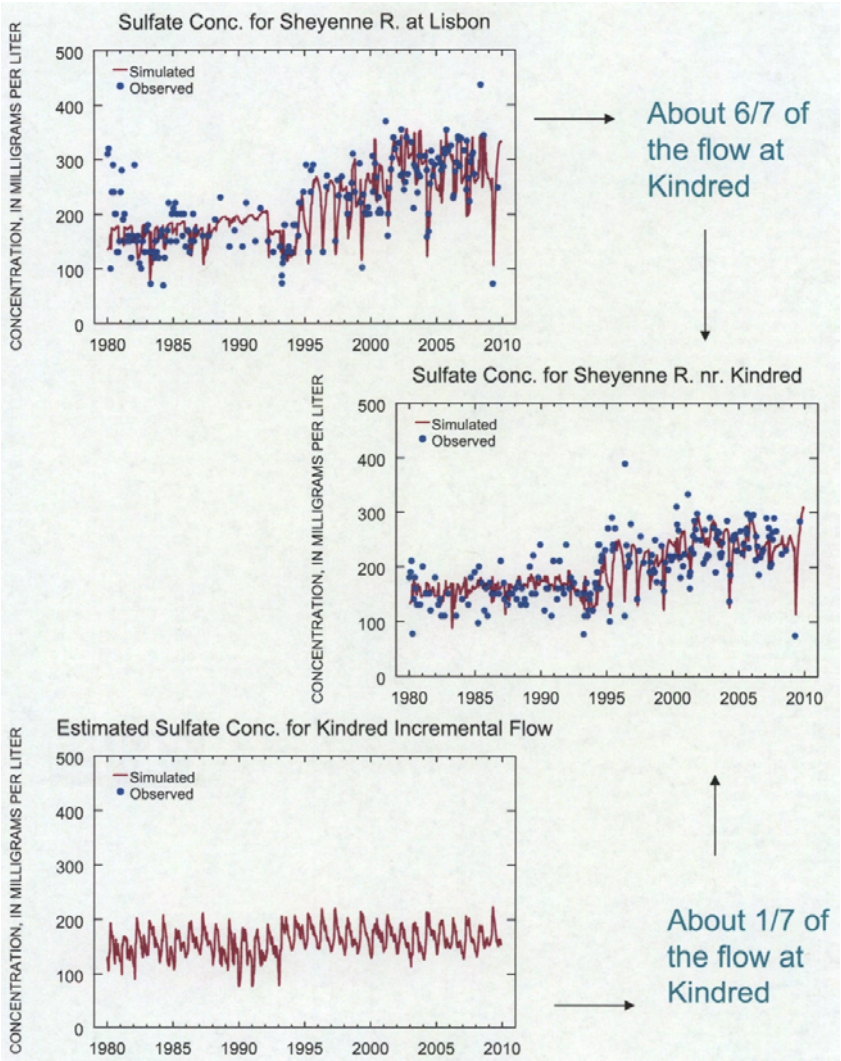

Flow for Sheyenne R. blw. Baldhill Dam
FLOW, IN CUBIC FEET PER SECOND
10000
1000
100
10
1
Observed
Simulated
1996
1998
2000
2002
2004
2006
Sulfate Conc. for Sheyenne R. blw. Baldhill Dam
CONCENTRATION, IN MILLIGRAMS PER LITER
500
400
300
200
100
0
Simulated
Observed
1996
1998
2000
2002
2004
2006


Routing flows from blw. Baldhill Dam to Lisbon
Flow for Sheyenne R. at Lisbon
FLOW, IN CUBIC FEET PER SECOND
10000
1000
100
10
1
0.1
Observed
Routed from blw. Baldhill Dam
1980
1985
1990
1995
2000
2005
2010
Incremental Flow for Sheyenne R. at Lisbon
FLOW, IN CUBIC FEET PER SECOND
10000
1000
100
10
1
0.1
Computed
Baldhill Cr. nr. Dazey
1980
1985
1990
1995
2000
2005
2010


Routing flows from blw. Baldhill Dam to Lisbon
Incremental Flow for Sheyenne R. at Lisbon
FLOW, IN CUBIC FEET PER SECOND
10000
1000
100
10
1
0.1
Computed
Baldhill Cr. nr. Dazey
1980
1985
1990
1995
2000
2005
2010
Incremental Flow for Sheyenne R. at Lisbon
FLOW, IN CUBIC FEET PER SECOND
10000
1000
100
10
1
Computed
Estimated from Dazey
1980
1985
1990
1995
2000
2005
2010


Sulfate Conc. for Sheyenne R. blw. Baldhill Dam
CONCENTRATION, IN MILLIGRAMS PER LITER
Simulated
Observed
About 5/6 of the flow at Lisbon
Sulfate Conc. for Sheyenne R. at Lisbon
CONCENTRATION, IN MILLIGRAMS PER LITER
Simulated
Observed
Estimated Sulfate Conc. for Lisbon Incremental Flow
CONCENTRATION, IN MILLIGRAMS PER LITER
Simulated
Observed
About 1/6 of the flow at Lisbon (note large uptrend)


Routing flows from Lisbon to Kindred
Flow for Sheyenne R. nr. Kindred
FLOW, IN CUBIC FEET PER SECOND
10000
1000
100
10
1
Observed
Routed from Lisbon
1980
1985
1990
1995
2000
2005
2010
Incremental Flow for Sheyenne R. nr. Kindred
FLOW, IN CUBIC FEET PER SECOND
10000
1000
100
10
1
Computed
Estimated
1980
1985
1990
1995
2000
2005
2010



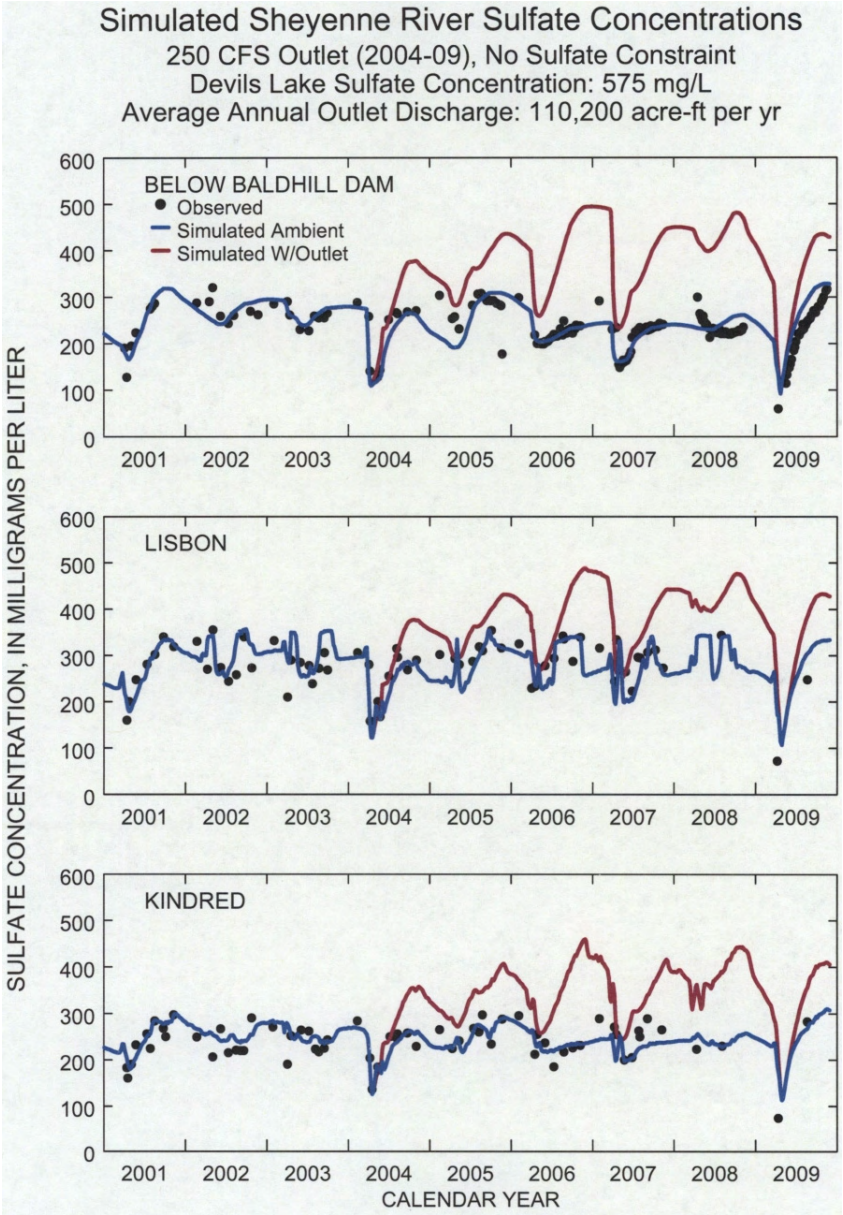
Simulated Effect of 250 cfs Outlet for Historical Scenarios

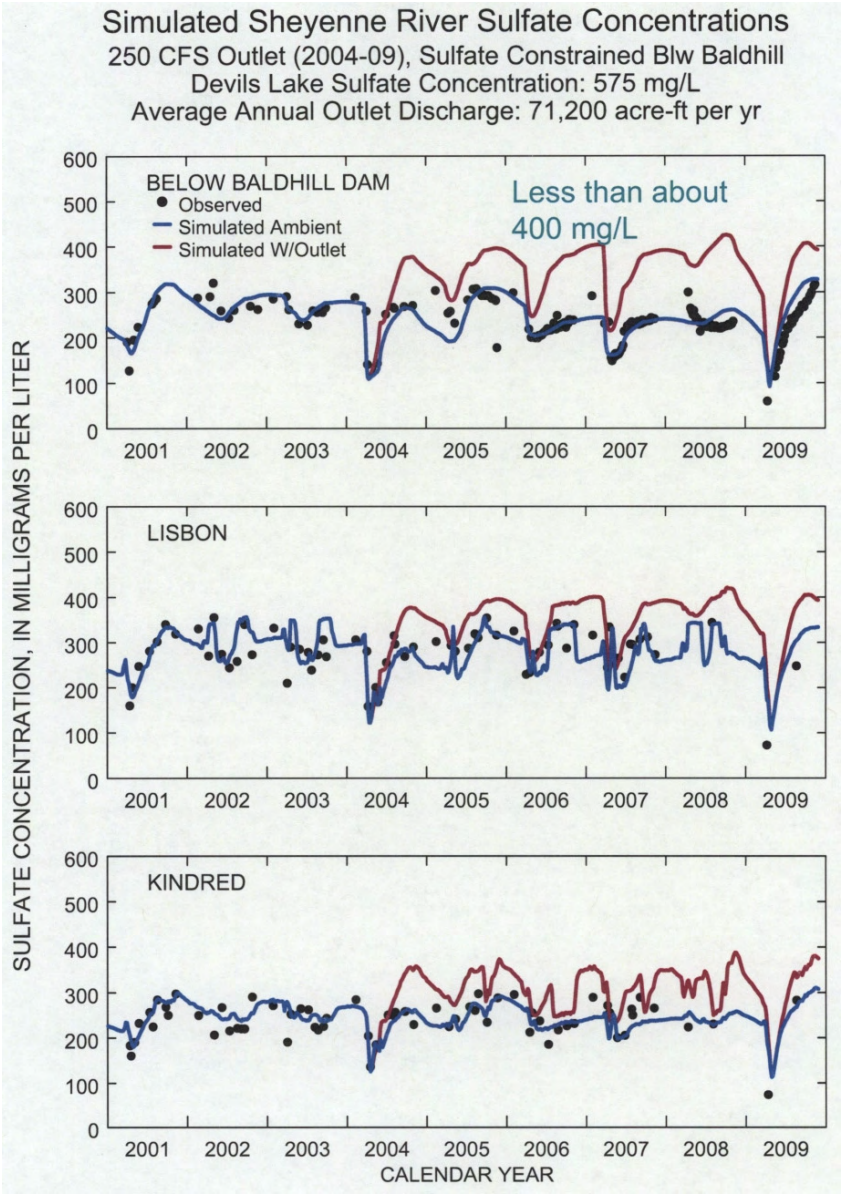
What if the proposed outlet (250 cfs, April–Nov operation, 600 cfs channel capacity constraint) were in operation during 2004–2009?

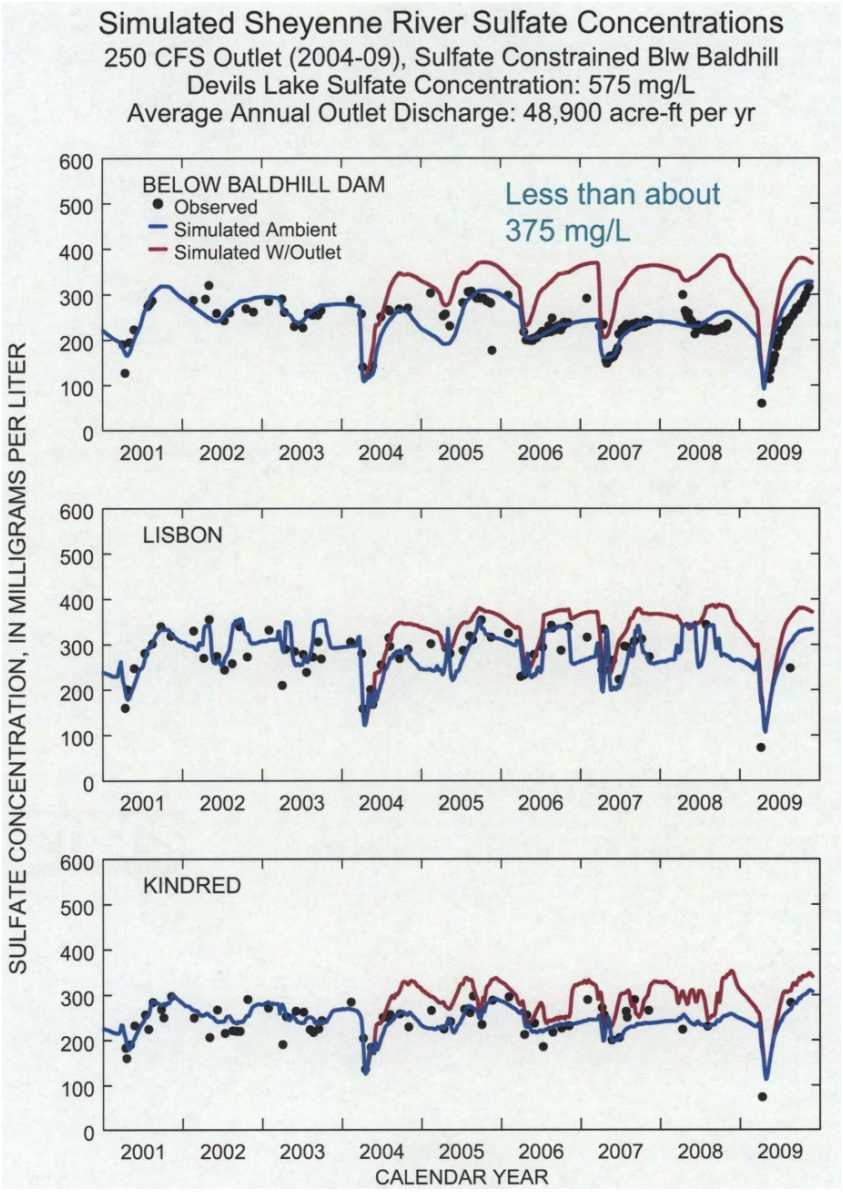
Assume 3 different sulfate constraints for outflow from Baldhill Dam: unconstrained, 400 mg/L, and 375 mg/L

Assume sulfate concentration from the outlet is 575 mg/L (actual concentration of West Bay in October 2009)

What are the potential effects on the amount of water that can be discharged from the outlet and on sulfate concentrations at Lisbon and Kindred?


Simulated Sheyenne River Sulfate Concentrations
250 CFS Outlet (2004-09), No Sulfate Constraint
Devils Lake Sulfate Concentration: 575 mg/L
Average Annual Outlet Discharge: 110,200 acre-ft per yr
BELOW BALDHILL DAM
Observed
Simulated Ambient
Simulated W/Outlet
LISBON
KINDRED
SULFATE CONCENTRATION, IN MILLIGRAMS PER LITER
CALENDAR YEAR
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009


Simulated Sheyenne River Sulfate Concentrations
250 CFS Outlet (2004-09), Sulfate Constrained Blw Baldhill
Devils Lake Sulfate Concentration: 575 mg/L
Average Annual Outlet Discharge: 71,200 acre-ft per yr
BELOW BALDHILL DAM
Observed
Simulated Ambient
Simulated W/Outlet
Less than about
400 mg/L
LISBON
KINDRED
SULFATE CONCENTRATION, IN MILLIGRAMS PER LITER
CALENDAR YEAR
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009

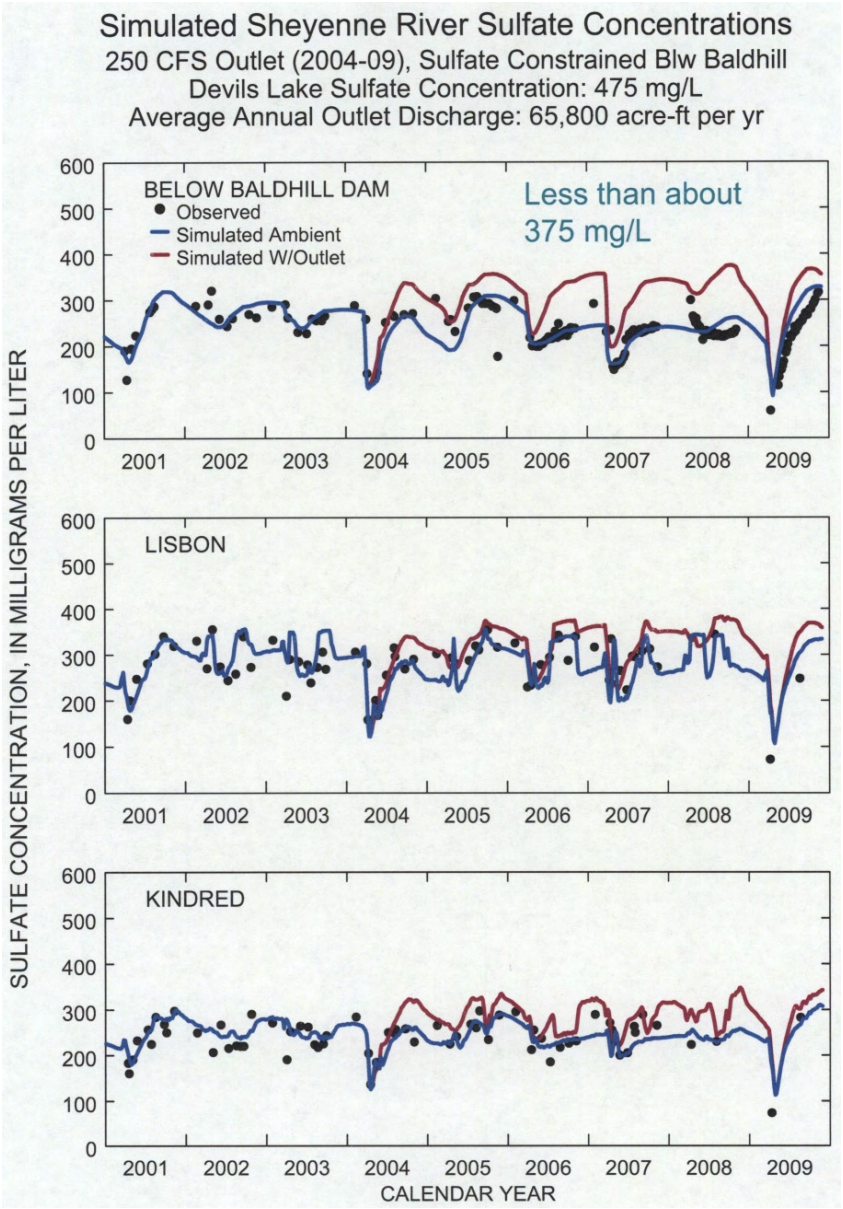


Looks like, to maintain max 350 mg/L sulfate concentration at Kindred, outflow from Baldhill Dam will need to be constrained to about 375 mg/L

Note that concentrations during winter ice cover may be higher

For the current Devils Lake sulfate concentration (575 mg/L), the outlet discharge (on average) would be about 50,000 acre-ft per year (less than one-half the discharge with no sulfate constraint)

What if Devils Lake continues to rise and sulfate concentration decreases to 475 mg/L? As indicated in the next slide, the outlet discharge would increase to about 66,000 acre-ft per year



Part 2.—Devils Lake/Sheyenne River Stochastic Flow and Sulfate Simulation Model

—Couples Devils Lake "5-Box" simulation model with Sheyenne River downstream flow and sulfate routing model

—Changes to "5-Box" model (still in progress):

—Update sulfate model parameters for Devils Lake (sulfate loads for inflows, mixing coefficients between boxes, sediment flux coefficients, etc.) using most recent (2002–09) sulfate concentration data

—Generate future sequences of ambient flows and sulfate concentrations for Sheyenne R. (including incremental flows and concentrations) that are in "lock-step" with Devils Lake

Assumptions Used for the Following Simulations

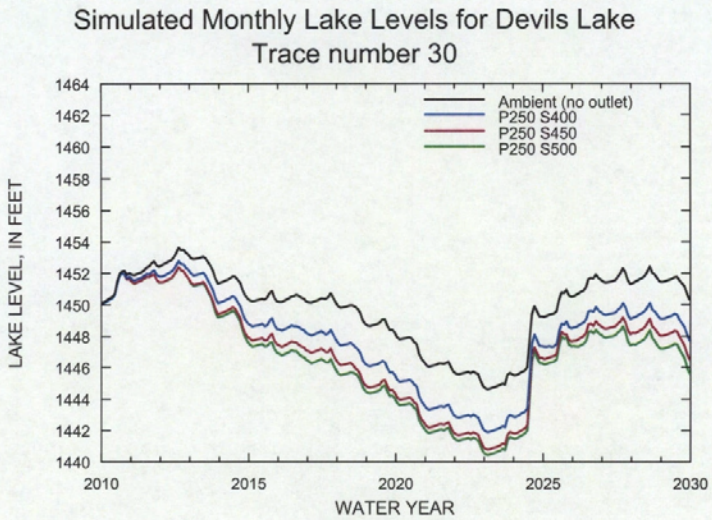
—Lake level of Devils Lake on June 30, 2010 is 1,452.0
—Climatic conditions for the future (i.e., the next 10–20 years) are similar to 1980–2009
—Higher ambient sulfate concentrations in the Sheyenne R. observed since 2000 (especially for Warwick) are assumed to persist into the future (but not get worse!)
—State outlet capacity is 100 cfs until June 30, 2010, and then increases to 250 cfs on July 1, 2010
—Outlet operates April 1 to Nov. 30, when lake level exceeds 1446.0
—Outlet discharge reduced if needed to maintain max 600 cfs flow at Bremen
—Outlet discharge constrained to maintain max sulfate concentration blw. Baldhill Dam (Lisbon and Kindred not yet included)

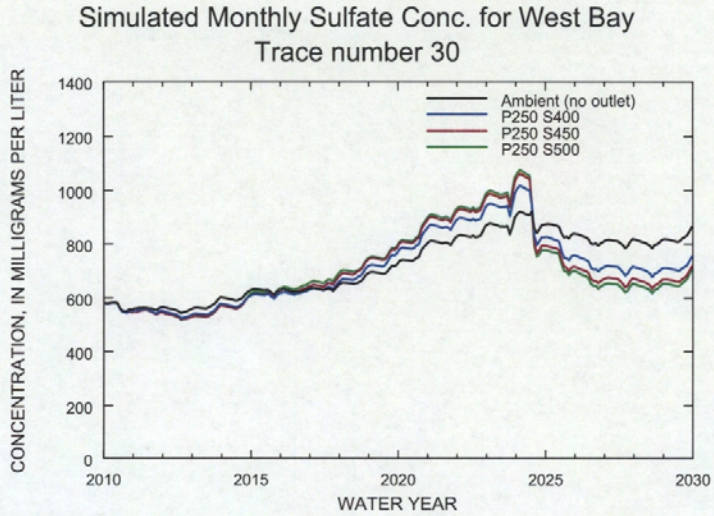
Simulated Traces Generated for 4 Conditions

—Ambient (no outlet discharge)
—P250–S400 (250 cfs outlet, 400 mg/L sulfate constraint blw. Baldhill)
—P250–S450 (250 cfs outlet, 450 mg/L sulfate constraint blw. Baldhill)
—P250–S500 (250 cfs outlet, 500 mg/L sulfate constraint blw. Baldhill)

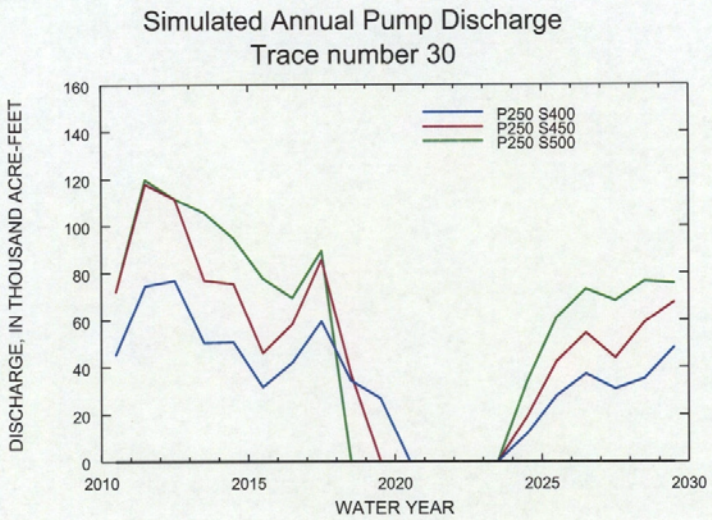
NOTE.—These constraints to not include ice effects on lake ashtabula, so concentrations may be higher in winter

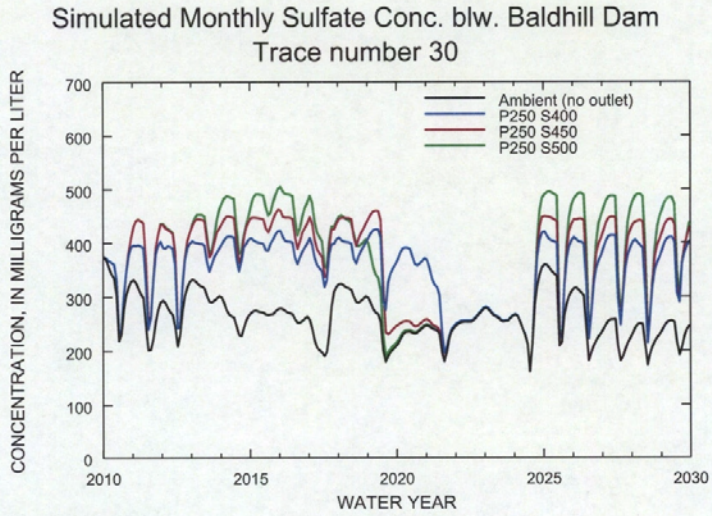
Trace 30 (ambient lake level < 1454; 52.8% chance)



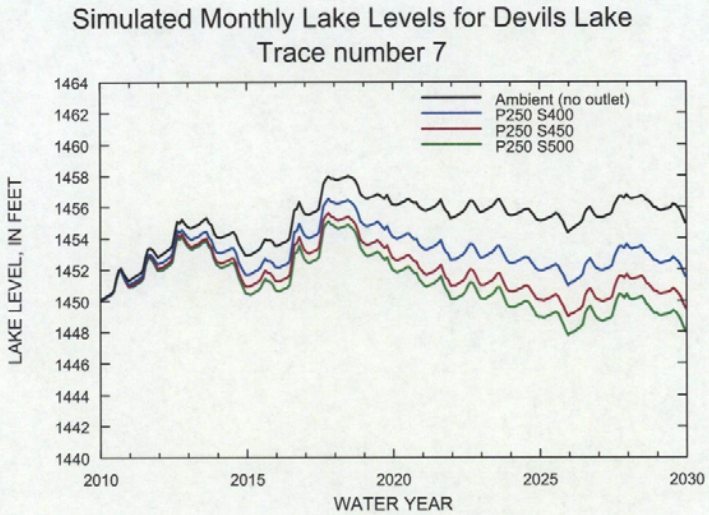


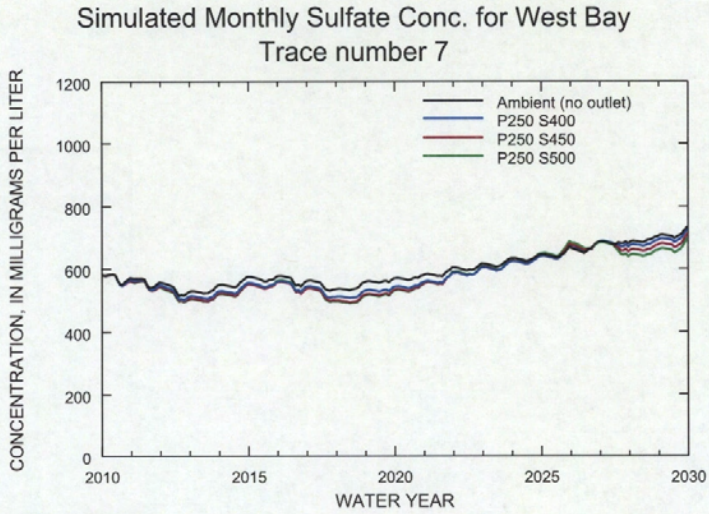
Trace 30 (ambient lake level < 1454; 52.8% chance)



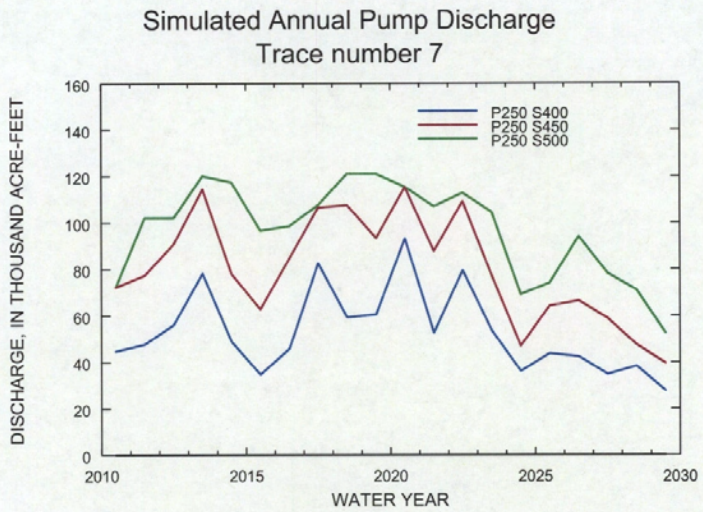


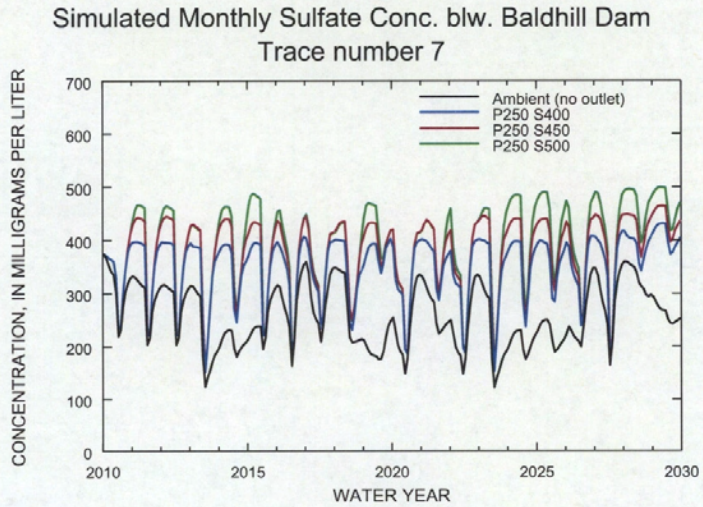
Trace 7 (ambient lake level 1454-58; 32.6% chance)



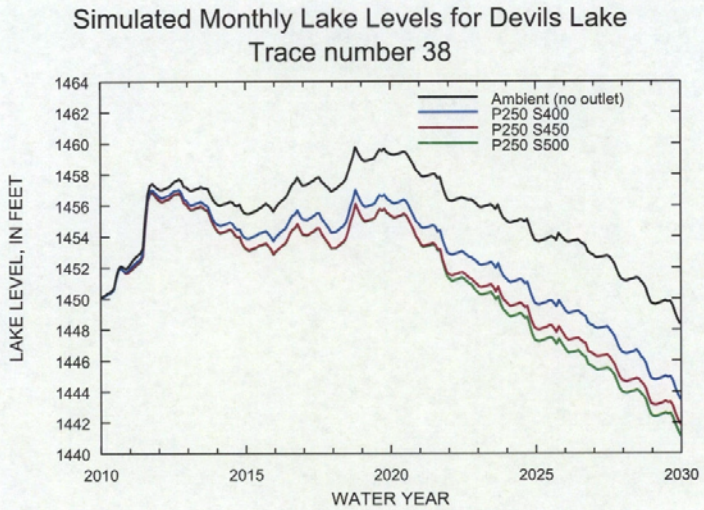


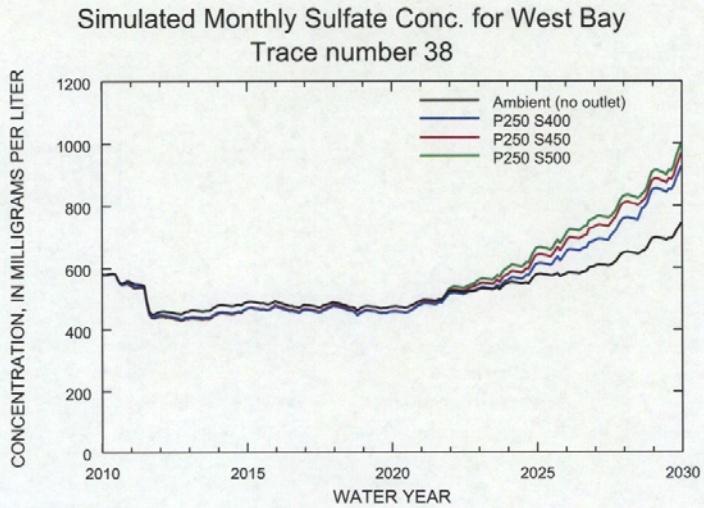
Trace 7 (ambient lake level 1454-58; 32.6% chance)



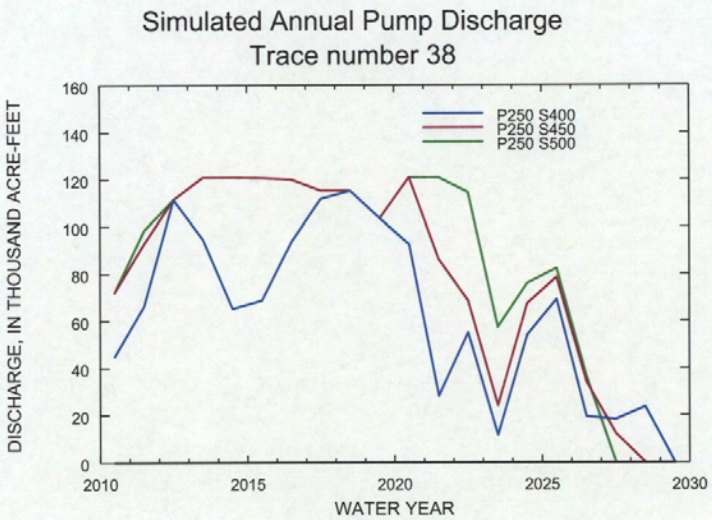


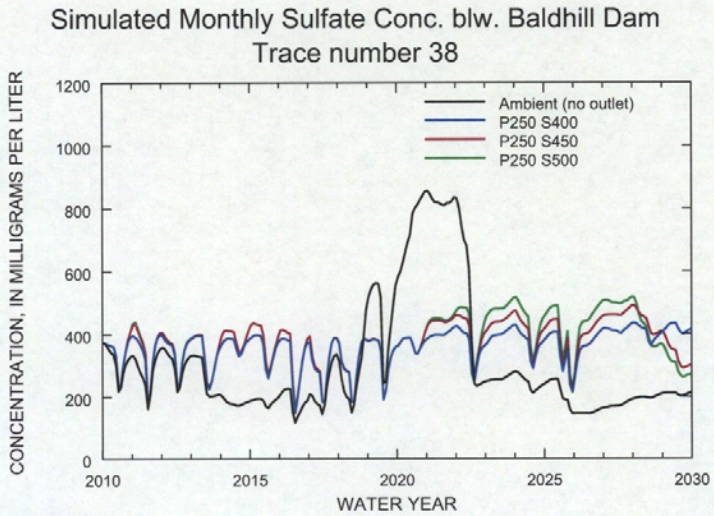
Trace 38 (ambient lake level 1458-60; 7.4% chance)



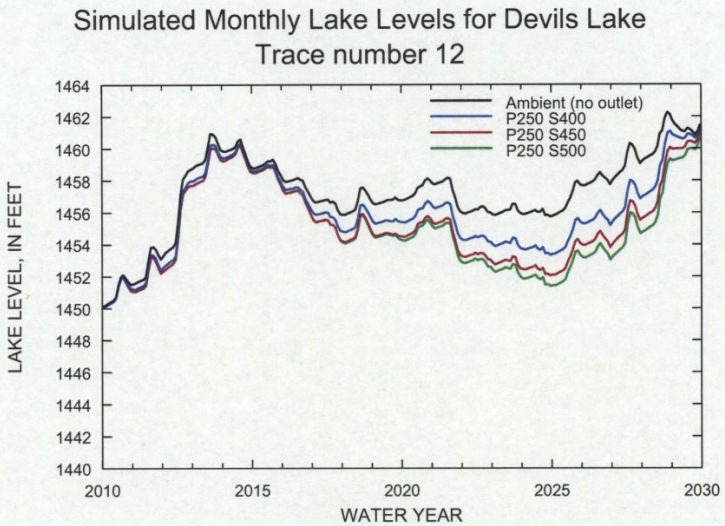


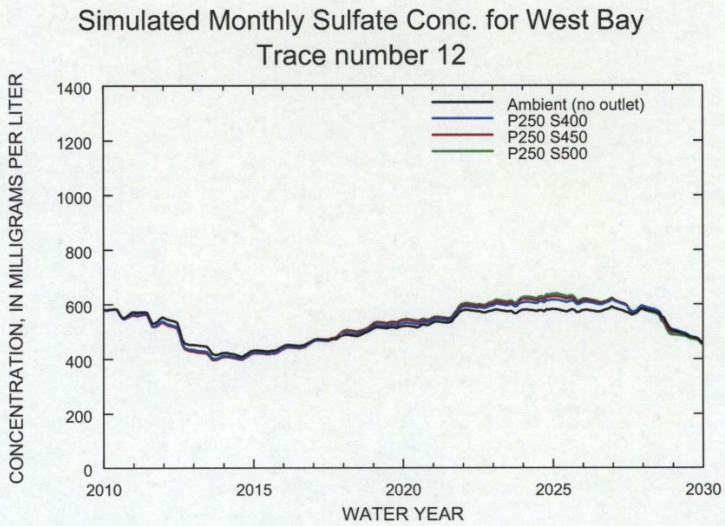
Trace 38 (ambient lake level 1458-60; 7.4% chance)

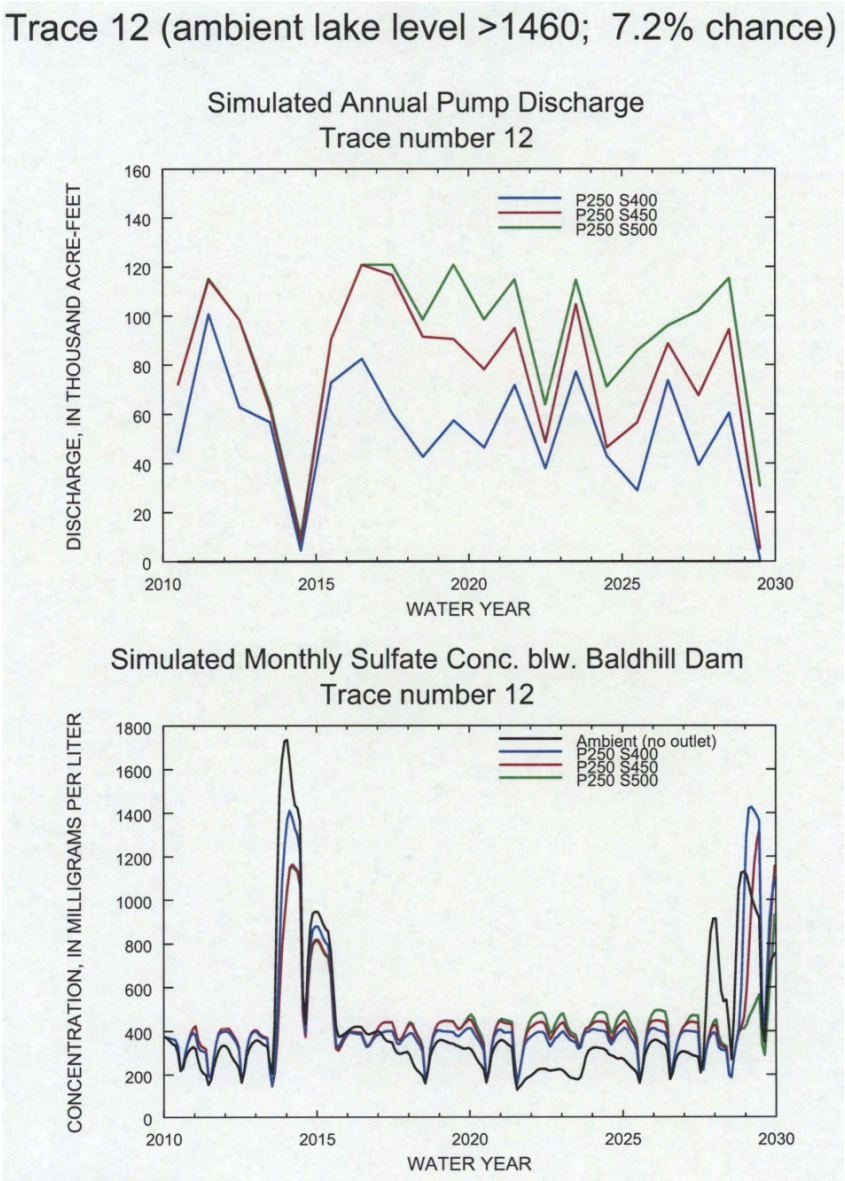




Trace 12 (ambient lake level >1460; 7.2% chance)







ESTIMATED PROBABILITIES OF EXCEEDING CRITICAL LAKE LEVELS WITHIN THE NEXT 20 YEARS (BY 2029)

Level	Percent chance of exceedance by 2029 for			
	No pump	P250–S400	P250–S450	P250–S500
1,454	47.2	33.4	28.4	26.4
1,456	27.4	17.9	14.5	13.3
1,458	14.6	8.8	6.9	6.5

ESTIMATED PROBABILITIES OF EXCEEDING CRITICAL LAKE LEVELS WITHIN THE NEXT 20 YEARS (BY 2029)—Continued

Level	Percent chance of exceedance by 2029 for			
	No pump	P250–S400	P250–S450	P250–S500
1,460	7.2	4.0	3.2	3.0

ATTACHMENT 4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,
REGION 8, 1595 WYNKOOP STREET,
DENVER, CO, FEBRUARY 25, 2010.

Mr. DENNIS R. FEWLESS,
Director, Division of Water Quality,
North Dakota Department of Health,
Bismarck, ND 58501–1947.

Subject: Triennial Review of Water Quality Standards.

DEAR MR. FEWLESS: The purpose of this letter is to provide the comments of the U.S. EPA Region 8 Water Quality Unit on the proposed revisions to Standards of Quality for Waters of the State, N.D. Administrative Code Chapter 33–16–02.1. The proposal was made available with a public notice dated December 22, 2009. Our review addressed the information and supporting analysis made available to the public in support of the proposed revision.

Please note that the positions described in our comments, regarding both existing and proposed water quality standards, are preliminary in nature and should not be interpreted as final EPA decisions under CWA § 303(c). EPA Region 8 approval/disapproval decisions will be made following adoption of new/revised water quality standards and submittal to EPA. Such decisions will be made considering all pertinent evidence available to the Region, including the comments and information submitted in response to the State's proposal.

REQUIREMENTS FOR CLASS 1A STREAMS [SECTION 33—16—02.1—09(1)(B)]

The proposed revision would clarify that for Class 1A streams where natural conditions do not satisfy Class 1 water quality criteria for municipal and domestic use, the availability of softening or other treatment methods may be considered in determining whether ambient water quality meets the requirements of the department. This revision allows the department to consider the availability of treatment processes such as ion exchange, reverse osmosis, or electrodialysis in determining whether streams with naturally elevated ambient conditions meet Class 1A requirements for protection of municipal and domestic use. We recognize there may be circumstances where streams with naturally high concentrations of certain parameters are used as water supplies, and that advanced drinking water treatment processes may be available that are capable of delivering the removal efficiencies necessary to achieve protective post-treatment concentrations. We also recognize that the proposed language is specific to streams where elevated concentrations are due to natural causes. Accordingly, our perspective is that the proposal would result in a useful clarification regarding streams where adoption of a Class 1A use classification is appropriate, and we support adoption of the proposal.

SHEYENNE RIVER WATER QUALITY STANDARDS

Site-Specific Criteria Proposal

The department proposed a site-specific total sulfate criterion of 750 mg/L (as a 30-day average) for the Sheyenne River from headwaters to 0.1 mile downstream from the Baldhill Dam. The site-specific criterion would be included in section 33–16–02.1–09(3)(b). A related proposal would remove the municipal and domestic water supply designated use from this same segment (discussed separately below). Because the water supply-based sulfate criteria for the next downstream segment of the Sheyenne River (450 mg/L) and the Red River (250 mg/L) are more stringent than the proposed site-specific criterion, the department also proposed adoption of a site-specific narrative provision to require that the more stringent downstream criteria must continue to be maintained.

We concur that a maximum sulfate limit at 750 mg/L is adequately protective of the aquatic life and agriculture uses that would be designated for this portion of the Sheyenne River. Using the EPA-approved aquatic life criterion adopted by Illi-

nois as a benchmark, the department's supporting analysis shows that a maximum sulfate concentration of 750 mg/L is protective of aquatic life. Note that the Illinois aquatic life criterion is a maximum limit and is expressed as a function of the ambient hardness and chloride concentration. Even at the most stringent hardness and chloride concentrations observed at four different locations on the Sheyenne River for the period April 2008 to July 2009, the supporting analysis demonstrates that a fixed maximum limit of 750 mg/L is more protective than the Illinois criterion. See Table 1. Based on evidence that agriculture uses are protected at a sulfate concentration of 2,000 mg/L, a maximum limit at 750 mg/L is also well below levels necessary to protect agriculture uses. Although we concur that a maximum limit of 750 mg/L is protective, below we have described a concern about the proposed 30-day averaging period.

TABLE 1.—COMPARISON OF PROPOSED SHEYENNE RIVER SULFATE CRITERION TO EPA-APPROVED ILLINOIS CRITERION

Sheyenne River Location	Proposed ND Sulfate Criterion (mg/L)	Illinois Aq. Life Criterion (mg/L) @ Most Stringent Ambient Hardness and Chloride [1]	Illinois Aq. Life Criterion (mg/L) @ Median Ambient Hardness and Chloride [1]
Flora	750	988	2212
Near Cooperstown	750	1473	2145
Near Bremen	750	1467	2495
Below Baldhill Dam	750	1106	1805

[1] Based on observed ambient hardness and chloride concentrations for April 2008 to July 2009

We recommend that the department consider whether the site-specific criterion should be expressed as a maximum value that must be met at all times. The department's supporting analysis uses the EPA-approved aquatic life criterion adopted by Illinois as a benchmark for evaluating whether the site-specific criterion would protect aquatic life. Note that the Illinois criterion is a maximum value that is never to be exceeded. By contrast, the proposed revision to section 33–16–02.1–09(3)(b) describes the site-specific criterion as a 30-day average. Because of variability, during periods when the average sulfate concentration is near 750 mg/L, individual samples would exceed 750 mg/L. We are concerned that the supporting analysis does not evaluate what maximum values would be observed during periods when the 30-day average concentration is 750 mg/L, and does not demonstrate that a 30-day average concentration at 750 mg/L would be protective of aquatic life. Absent a demonstration that 750 mg/L as a 30-day average would be protective, we recommend adoption of the 750 mg/L site-specific criterion as a maximum value that must be met at all times.

We support adoption of the proposed site-specific narrative provision requiring attainment and maintenance of the sulfate criteria for downstream waters. The proposed narrative provision is consistent with the Federal requirement (40 CFR section 131.10(b)) to consider the water quality standards of downstream waters and provide for the attainment and maintenance of such standards.

Municipal and Domestic Use Proposal

The department also proposed a site-specific change to the uses designated for the Sheyenne River. The proposal would specify that the Sheyenne River from its headwaters to 0.1 mile downstream from Baldhill Dam is not classified for municipal or domestic use.

Although water supply uses are not one of the uses identified in the Clean Water Act section 101(a)(2) goal, it is nevertheless important for the State to provide a supporting rationale for any proposal to remove a water supply designated use, and to allow for public review and comment.

The supporting analysis that was made available for public review includes information indicating that there are no municipal, rural water district, or industrial uses, nor are there plans, preliminary plans or intent to divert water for these purposes in this stretch of the Sheyenne River. Based on our review of the department's supporting rationale, our current thinking is that the proposed change to the designated uses for the upper portion of the Sheyenne River is reasonable and consistent with current and anticipated uses. In addition, it is consistent with the EPA requirement to designate appropriate water uses to be achieved and protected. See 40 CFR section 131.10(a).

REQUIREMENTS FOR RESERVOIRS [SECTION 33–16–02.1–09(3)(E)]

The proposed revision would clarify that reservoirs located on Class 1A, Class II, or Class III streams shall have the parameter limitations for that class stream. This would be a refinement to the current requirement, which applies Class 1 stream parameter limitations to all reservoirs, even if the reservoir is located on a Class 1A, Class II, or Class III stream. The list of parameters where limitations would be modified includes chloride, sodium, sulfate, and pH. For chloride and sulfate, our understanding is that the Class 1A, Class II, and Class III limits are based on concentrations observed in Class 1A, Class II, and Class III streams under undisturbed natural conditions. In addition, for all four parameters, the reservoir limitations that would now apply have been approved by EPA previously as appropriate for the protection of Class 1A, Class II, and Class III streams. Accordingly, our current thinking is that the proposed revision is reasonable and appropriate, and that for chloride and sulfate, it is consistent with the protection of uses that are attainable under natural conditions.

FECAL COLIFORM CRITERIA (TABLE 1)

The department proposed deletion of the fecal coliform criteria in table 1. However, the E. coli criteria adopted previously, and approved by EPA previously, would be retained for the protection of recreation uses. As discussed in the 1986 criteria document for bacteria, epidemiological studies conducted by EPA at fresh water sites did not find a statistical relationship between fecal coliform densities and risk of illness in swimmers. By contrast, such a statistical relationship was found for E. coli, demonstrating that E. coli is a better indicator of the health risks associated with recreational uses.[1] Based on these data, and EPA's analysis of these data (see the EPA criteria document), we support the department's proposal to delete the fecal coliform criteria in table 1.

REVISIONS TO WATER QUALITY CRITERIA (TABLE 2)

New acute and chronic aquatic life criteria were proposed for chlorpyrifos, tributyltin, and parathion consistent with criteria recommendations issued by EPA pursuant to CWA section 304(a). Revised human health criteria were proposed for acrolein and phenol consistent with recently issued changes to the EPA criteria recommendations for those parameters.

We support adoption of these proposed new/revised criteria as consistent with the EPA requirement to consider new scientific information and adopt revisions to water quality criteria as appropriate. See 40 CFR section 131.11 and 131.20(a).

REQUIREMENTS FOR LAKES (APPENDIX II)

The proposed revision would clarify that for lakes not specifically named in Appendix II, a Class 4 classification applies by default. We view this proposal as important and necessary to ensure that water quality standards are identified for all lakes in North Dakota (i.e., not only those lakes specifically named in Appendix II). Accordingly, we support adoption of the proposed revision.

CONCLUSION

We hope these comments are helpful to the department. If there are questions concerning our comments, the most knowledgeable person on my staff is David Moon, and he can be reached at (303) 312–6833.

Sincerely,

KAREN HAMILTON, CHIEF,
Water Quality Unit.

Senator DORGAN. Yes?

Mr. BELFORD. Senator, the one issue that's not surfaced today is very, very private matter it's groundwater. And I'm not just sure how you handle groundwater because it's coming from the upper regions from the land. Most of the homes in Devils Lake have sump pumps and lots of them. I have three in my home.

[1] As presented in table 2 of the 1986 criteria document, correlation coefficients for swimming-associated gastroenteritis rates against mean indicator densities were 0.80 and 0.08 for E. coli and fecal coliforms, respectively, at fresh water swimming beaches.

CONCLUSION OF HEARING

Senator DORGAN. All right. Well, thank you very much. I appreciate all of you being here. This hearing is recessed.

[Whereupon, at 11:57 a.m., Friday, February 19, the hearing was concluded, and the subcommittee was recessed, to reconvene subject to the call of the Chair.]

MATERIAL SUBMITTED SUBSEQUENT TO THE HEARING

[CLERK'S NOTE.—The following testimonies were received by the Subcommittee on Energy and Water Development subsequent to the hearing for inclusion in the record.]

PREPARED STATEMENT OF RICHARD BETTING, VALLEY CITY, NORTH DAKOTA

MAIN POINTS

— The ND SWC Outlet from Devils Lake will not prevent Devils Lake from rising;

—Pumping the Devils Lake Outlet will violate State statues protecting beneficial uses of the Sheyenne River for downstream water users, including municipal and individual uses, aquatic life, recreation and irrigation;

—Governor Hoeven's decision (July 15, 2009) to void the original permit to drain was made without consultation with downstream entities and individuals who would be negatively affected by North Dakota Health Department action to increase sulfate levels in the Sheyenne from 450 mg/L to 750 mg/L. The action was also arbitrary and capricious and made without supporting scientific documentation of the effects of outlet operation on the aquatic life or the hydrology of the Sheyenne River.

Here are some of those who should have been involved in making any decision before Governor Hoeven voided the original outlet permit and allowed increased pumping of the Devils Lake outlet from 100 cubic feet per second to 250 cfs.

—*Barnes County and Valley City Commissions*.—Valley City uses river water for drinking.

—*The U.S. Fish Hatchery*.—Can hatchery fish survive in Devils Lake water?

—*The North Dakota Game and Fish Department*.—What will 100,000 acre/feet of Devils Lake water do to Lake Ashtabula?

—*The U.S. Army Corps of Engineers*.—Who controls Baldhill Dam?

—*Landowners along the Sheyenne River*.—I am one of them.

—*Fargo and West Fargo*.—They will be affected by Devils Lake water.

—*Canada*.—Have Canadian concerns about biota transfer been adequately addressed? The FEIS of the Corps' Outlet Project seem to indicate that they have not. And what about added levels of contaminated Devils Lake water in general? What about taking the issue to the International Joint Commission for mediation?

—*The U.S. Bureau of Reclamation*.—Where are the studies showing the effects of Devils Lake water on the Red River Basin Water Supply Project? Has the RRBWSP taken Devils Lake water into consideration? If so, what are the ramifications of more Devils Lake water in the Sheyenne?

All of these affected parties should have facts and scientific data—not just verbal assurances—to reveal the effects of adding 250 cfs Devils Lake water to the Sheyenne River.

But when Governor Hoeven on July 15, 2009, signed the letter allowing the use of Emergency Rules to void the permit to drain and replace it with a plan that will allow degradation of the Sheyenne River, none of these constituents had any voice in the matter. An arbitrary and capricious act replaced science, common sense and community involvement.

Scientific studies should be done before any decision is made to allow the Devils Lake outlet to continue pumping contaminated water into the Sheyenne River.

I live along the Sheyenne River south of Valley City, North Dakota, and whatever happens to the river affects me and impacts the ways I and hundreds of others are able to use the river. For the State of North Dakota to add degraded Devils Lake water to the Sheyenne River is a violation of all property owners' rights because in one way or another contaminating river water reduces its beneficial uses. The more

contaminated the water becomes, the fewer uses, and contrary to what the North Dakota Department of Health says, all of the beneficial uses of the river cannot be maintained when large quantities of Devils Lake water are dumped into the river. That is, the river cannot maintain the number of fish and mussel species it now contains, cannot be used for recreational purposes that are now enjoyed and cannot be used for public consumption.

Devils Lake has been rising since the 1950s. Higher water on the lake is not new and this is not an emergency. The only way to prevent water from reaching the lake is to turn off the faucet, just as you would if it were a bathtub. During the past 50 years over 350,000 acres of wetlands in the upper Devils Lake basin were drained. In the spring of 2009, for example, over 550,000 acre-feet of water drained from those acres into Devils Lake from the upper basin. The lake rose 3½ feet.

How can those living around Devils Lake deal with rising water? Evapotranspiration will remove over 30 inches each year, but the Devils Lake outlet—removing about 3–4 inches per year—cannot keep up with that kind of annual inflow. Rather than draining the tub, stop the inflows

It makes no sense to discharge polluted Devils Lake water into the Sheyenne River when the faucet that keeps the tub full is left on. Turn off the faucet.

PREPARED STATEMENT OF GARY L. PEARSON, D.V.M.

In the January 29, 2010, news story announcing the Senate Committee on Appropriations Subcommittee on Energy and Water Developments' February 19, 2010, field hearing on the release of water from Devils Lake and the potential impact on downstream communities, Subcommittee Chairman Senator Byron Dorgan of North Dakota was quoted as saying:

"We have made all kinds of efforts . . . to help provide the funding necessary to mitigate the damages of flooding at Devils Lake. But I have always insisted, I am not interested in transferring the problem from one region of our State to another." (Daum, 2010)

Transferring problems from one region of the State to another—and to other States and provinces—has been a cornerstone of water management in North Dakota for nearly a century. Indeed, by definition, wetland drainage is the epitome of transferring a problem from one area to another.

THE CONTRIBUTION OF WETLAND DRAINAGE TO FLOODING IN NORTH DAKOTA

North Dakota originally had an estimated 5,000,000 acres of wetlands, but by 1984, 3,000,000 acres of those wetlands had been lost (Tiner, 1984). Most of those wetlands occurred in the Red River Valley, the Drift Prairie and the Missouri Coteau in the eastern half of Dakota. Wetland drainage in the James River Basin has contributed to flooding at Jamestown and other areas along the James River in North Dakota and South Dakota where just a dozen drainage projects in two counties contributed 5 feet to the record flood crest at Jamestown Reservoir in 2009 (See Pearson, 2009a, Attached). Wetland drainage in the Souris River Basin, where 220,000 acres of wetlands had been drained by 1980, has contributed to flooding at Minot and other areas along the Souris River. (Pearson, 1985)

THE RED RIVER BASIN

Most of the rest of North Dakota's 3,000,000 acres of drained wetlands and 2,000,000 acres of remaining wetlands were or are located within the Red River Basin in watersheds of tributaries to the Red River of the North, such as the Sheyenne, the Wild Rice, the Maple, the Rush, the Elm, the Goose, the Turtle, the Forest, the Park and the Pembina rivers. With the construction of the Devils Lake outlet to the Sheyenne River by the North Dakota State Water Commission, wetland drainage in the 3,814 square-mile Devils Lake Subbasin also has been contributing water to the Red River since 2005.

North Dakota Century Code § 61–32–03 specifies that:

"Any person, before draining a pond, slough, lake, or sheetwater, or any series thereof, which has a watershed comprising 80 acres (32.37 hectares) or more, shall first secure a permit to do so . . . A permit may not be granted until an investigation discloses that the quantity of water which will be drained from the pond, slough, lake, or sheetwater, or any series thereof, will not flood or adversely affect downstream lands."

However, the North Dakota State Engineer and local water resource districts rarely conduct the required investigations to document the acreage of wetlands destroyed by drainage projects, the volume of water contributed from the drained wetlands, or the effects of the drainage on downstream lands. In fact, the statute is routinely circumvented by the very agencies that are supposed to enforce it by:

—Initiating action only if formal complaints are filed by the public.

—Determining that the watershed involved is less than 80 acres in size, either by an arbitrary decision unsupported by evidence or by the expedient of two or more ditches being used to drain the watershed.

—Arbitrarily and without evidence determining that the drainage involves "cleanout" of an existing drain.

—Arbitrarily denying, in the face of unequivocal evidence to the contrary, that drainage has occurred.

—Issuing drainage permits after the fact without conducting the required investigations. (Pearson, 1985)

Because the State Water Commission has not compiled information on wetland drainage in the State, it is difficult to determine the exact extent to which wetland drainage has contributed to flooding in eastern North Dakota; however, it clearly is in the millions of acre-feet of water in periods of high precipitation.

Nearly three decades ago, in a report on "Stream Flow Changes in the Southern Red River Valley of North Dakota," investigators at the North Dakota State University determined that:

". . . The analysis indicates that approximately 50 percent of the increase in predicted mean annual flow [in the Maple and Goose rivers], *36 percent of the increase in predicted maximum daily flow, and 70 percent of the increase in predicted mean spring flow is due to increased drainage area.* (Emphasis added) (Brun, et al., 1981)

"The current drainage upstream from Mapleton was estimated to be 64 percent greater than the natural drainage, while the current drainage upstream from Hillsboro was estimated to be 180 per cent greater [than] the natural drainage." (Brun, et al., 1981)

The investigators concluded that:

"Significant increases in flow on the Maple, Wild Rice and Goose Rivers have occurred over the last 30 to 40 years. Flow rates were shown to be related to climate (precipitation); however, *there appears to be no change in precipitation patterns to account for the increase in flow rates. Predicted flow rates were shown to be closely related to changes in basin size due to land drainage in the Maple River and Goose River basins. It appears that land drainage is a factor aggravating the flooding problem in eastern North Dakota . . .* " (Emphasis added) (Brun, et al., 1981).

Wetland drainage also has contributed significantly to flooding on the Pembina River at the Canadian Border (See Pearson, 2009b, Attached).

Five years ago, in a study of "Changes in Fish Assemblage Structure of the Red River of the North," investigators reported that:

"Watershed changes such as conversion of grassland to intensive row crop agriculture, *wetland drainage, and channelization of tributaries* may have affected species richness by increasing hydrologic variability. Climatic and hydrologic records over the past 120 years suggest wet periods in the late 1800s to early 1900s and the late 1900s to present separated by a dry period that included the drought of the 1930s. *While the 40-year periods from 1882 to 1921 and 1962 to 2001 had similar precipitation averages, peak flows at Grand Forks have averaged 60 percent higher in the latter time period*." (Emphasis added) (Aadland, et al., 2005)

The contribution of wetland drainage is becoming widely recognized across the country. For example:

". . . According to the Army Corps of Engineers, 111 million acre-feet of water passed St. Louis during the 80 days of flooding in 1993 (citation omitted). Given that, at this location on the river, the bank-full discharge is 450,000 cubic feet per second, the volume of water in excess of this discharge for the 80-day flood period was approximately 40 million acre-feet. Distributed at a 3-foot depth (the approximate depth of a deep marsh), these waters would have covered a little more than 13 million acres. The 26 million acres of wetlands eliminated (in the upper Mississippi Basin) since 1780 could have easily accommodated this volume . . ." (Hey and Philippi, 1995)

Although the contribution of the drainage of some 2,000,000 acres of wetlands in the Red River Basin to the 8 of the 10 worst floods in history that have occurred on the Red River in the last 30 years is difficult to quantify specifically, there can

be no doubt that it has been a significant factor. And now taxpayers in North Dakota, Minnesota and across the country are faced with spending up to $1.3 billion dollars to protect just Fargo, North Dakota, and Moorhead, Minnesota, from flooding on the Red River—while increasing flooding downstream. (The Forum, 2010)

It is in this context that the impacts of the drainage of water from Devils Lake on downstream communities must be considered.

The Devils Lake Subbasin

In his Fifth Biennial Report to the Governor for 1911–1912, the North Dakota State Engineer noted that:

"The water level of any lake possessing no outlet depends on the amount of evaporation, seepage, rainfall and the run-off into the Lake from the drainage area tributary to it. The drainage area of Devils Lake is nearly 2,000 square miles, but the land lies so nearly level, and there are so many marshes, meadows, small ponds and lakes which arrest the flow of the water and from which it evaporates, that it is not likely that the run-off from more than 700 to 800 square miles of the total area ever reaches the lake." (North Dakota State Engineer, 1911–1912)

As is the case in the Red River Valley, no comprehensive and objective studies have been done on the contribution of wetland drainage in the Devils Lake Basin to the rise of Devils Lake. In fact, there is no agreement on the number of acres of wetlands that have been drained in the Devils Lake Basin. For example, the Devils Lake Basin Advisory Committee, established by the North Dakota Legislative Assembly in 1975 to develop long-term water resource policies for the Devils Lake Basin, estimated that 569,000 acres of wetlands originally were present in the Basin and that approximately 75,000 acres of wetlands had been drained by 1976 (Devils Lake Basin Advisory Committee, 1976). Using topographical maps of 1.45 percent of the Devils Lake Basin, a 1983 report estimated that 412,000 acres of drained and undrained wetlands were present in the Devils Lake Basin (Ludden, et al., 1983). Based on aerial photography, the North Dakota State Engineer and the U.S. Fish and Wildlife Service estimated in 1997 that 189,000 acres of wetlands had been drained in the Devils Lake Basin (Sprynczynatyk and Sapa, 1997). Using a Digital Elevation Model, West Consultants, Inc., estimated that 92,429 acres of wetlands had been drained in 68 percent of the Devils Lake Basin (West Consultants, Inc., 2001), but the modeling technique used in the study is not an accurate method for delineating drained prairie wetlands. (Johnson, 2001)

The primary problem in basing estimates of the acreage of drained wetlands on the identification of drained wetland basins and drainage ditches is that after a few years of tillage and siltation many of the basins and drains no longer can be identified. It is similar to attempting to determine the number of bison that once roamed the prairies by counting the number of bison skulls that can be found. There is, however, one significant difference: the "skeletons" of drained wetlands still remain buried on the prairie in the form of hydric soils, i.e., soils that developed over thousands of years under wetland conditions. Consequently, the most reliable way to determine how many acres of wetlands have been drained in an area is to count the acres of remaining wetlands, which can be done quite readily, and subtract that number from the acres of hydric soils in the area.

In 1998, the North Dakota State Water Commission estimated that:

"Approximately 211,000 acres of wetlands exist in the Devils Lake Basin including upper basin lakes, which comprise about 30,000 acres of the total." (Hovde, 1998)

Subtracting the 211,000 acres of wetlands remaining in the Devils Lake Basin in 1998 from the 569,000 acres of wetlands originally estimated to have been in the Basin by the Devils Lake Basin Advisory Committee (1976) would indicate that 358,000 acres of wetlands have been drained in the Devils Lake Basin. However, there are an estimated 588,917 acres of hydric soils in the Devils Lake Basin (U.S. Fish and Wildlife Service, 1997), so the acreage of wetlands that have been drained in the Devils Lake Basin actually is closer to (589,000 − 211,000 =) 378,000 acres.

Wetlands in the Devils Lake Basin have the capacity to store an average of 18.5 inches (1.54 feet) of water in a 100-year runoff event and they have an average maximum storage capacity of 20.9 inches (1.74 feet) of water (Ludden, et al., 1983). Runoff in the Devils Lake Basin since 1993 frequently has exceeded the 100-year frequency run-off, so this means that the drainage of 378,000 acres of wetlands in the Devils Lake Basin eliminated some 657,000 acre-feet of storage in the Basin. Therefore, because the Devils Lake Basin had been in a 5-year drought since 1988 so wetland basins were largely dry, an additional 657,000 acre-feet of water may have entered Devils Lake from those drained wetland basins when high levels of precipita-

tion occurred in 1993. In addition, because evaporation in the Devils Lake Basin exceeds precipitation by an average of 12.8 inches per year, and because evaporation exceeded precipitation by an average of 8 inches per year even during the especially wet years from 1993 to 1999 (West Consultants, Inc., 2001), as much 253,000 acre-feet of water may have entered Devils Lake every year since 1993 as a result of lost evaporation capacity from those drained wetlands. Consequently, as much as 80 percent of the average 317,000 acre-feet of inflows to Devils Lake from 1993 to 1999—and as much as 43 percent of the record 587,000 acre-feet of inflows in the spring of 2009—may have been the result of the loss of evaporation capacity from drained wetlands.

Of course, it would not be realistic to suggest that all of the 3,000,000 million acres of drained wetlands in North Dakota, or the 378,000 acres of drained wetlands in the Devils Lake Basin, could be restored. However, what is clear is that further wetland drainage in North Dakota, and particularly in the Red River Basin and the Devils Lake Basin, should be strictly prohibited except in the most critical situations and where the hydrologic and ecologic functions of the drained wetlands are fully replaced within the watershed. In addition, a comprehensive, long-term program to restore wetlands wherever possible should be implemented.

IMPACTS OF THE DISCHARGE OF WATER FROM THE DEVILS LAKE OUTLET ON DOWNSTREAM COMMUNITIES

In 2004, the North Dakota Department of Health issued a North Dakota Pollution Discharge Elimination System permit, under the section 402 of the Federal Clean Water Act, for the North Dakota State Water Commission's Devils Lake outlet. The permit, which was to expire on June 30, 2008, constrained operation of the outlet by (1) a 100 cubic feet per second (cfs) maximum discharge, (2) limiting operation of the outlet from May through November, (3) limiting maximum daily Total Suspended Solids to 100 mg/L, (4) limiting the total combined discharge from the outlet and natural flows in the Sheyenne River to 600 cfs, (5) and a 300 milligrams per liter (mg/L) maximum sulfate level in the Sheyenne River. Constrained by these conditions, the outlet removed a total of 38.46 acre-feet of water from Devils Lake in 2005 and it did not operate at all in 2006. (See Pearson 2009c, Attached)

Two years later on August 16, 2006, the North Dakota Department of Health modified the permit for the outlet by (1) removing the restriction on operation of the outlet from May through November, (2) removing the 100 mg/L maximum daily Total Dissolved Solids restriction, and (3) increasing the maximum sulfate limit in the Sheyenne River to 450 mg/L. Operating under these modified permit conditions, the outlet removed a total of 298.18 acre-feet of water from Devils Lake in 2007, and it removed a total of 1,241 acre-feet in 2008. At the current lake elevation of 1,450 feet and surface area of 163,000 acres, that is equivalent to a 0.01 foot (0.12 inch) reduction in the level of Devils Lake. (See Pearson 2009c, Attached)

In July 2009, the North Dakota Department of Health vacated the Clean Water Act section 402 permit it had issued for the Devils Lake outlet, implemented an interim emergency rule raising the maximum sulfate level in the Upper Sheyenne River to 750 mg/L, and proposed the addition of a new section to the Department's administrative rules permanently raising the sulfate limit in the Upper Sheyenne River to 750 mg/L. Then in December 2009 the North Dakota State Water Commission submitted an application for a permit to increase the capacity of the Devils Lake outlet from 100 cfs to 250 cfs. Because sulfate levels in West Bay of Devils Lake are at 600 to 700 mg/L and discharges would no longer be constrained by the capacity of the channel of the Sheyenne River, the only restriction on operation of the outlet would be the capacity of the pumps. (See Pearson, 2009c and 2010a, Attached)

No studies have been done to identify the impacts on downstream communities of the operation of a 250 cfs Devils Lake outlet limited only by a 750 mg/L maximum sulfate limit in the Sheyenne River (See Pearson, 2010, p. 6, Attached), but the U.S. Army Corps of Engineers has identified a number of significant adverse impacts to the Sheyenne River and downstream communities resulting from the operation of a 300 cfs Devils Lake outlet constrained by total combined flows of 600 cfs and a much lower 300 mg/L sulfate limit in the Sheyenne River (U.S. Army Corps of Engineers, 2003). Those impacts identified by the U.S. Army Corps of Engineers include:

—Accelerated erosion along the Sheyenne River.
—Exacerbated flooding in the Sheyenne River.
—Substantial change in the flow regime of the Sheyenne River, including a five to tenfold increase in summer and fall flow.

—Changes in habitat conditions and availability resulting in changes in aquatic species composition and abundance in the Sheyenne River, including lost year classes of fish and declines in invertebrate populations.
—Increased nutrient loading of Lake Ashtabula.
—The shifting of a large portion of the riparian vegetation along the Sheyenne River from woods to a more open community type, resulting in concurrent changes in animal species composition along the river.
—Reduced agricultural production on irrigated lands along the Sheyenne and Red rivers.
—Increased salinity hazards associated with use of river water for irrigation.
—Diminished property values along the Sheyenne River.
—Induced salt loading to floodplain soils along the Sheyenne River.
—Increased annualized downstream water treatment costs ranging from $1,757,000 to $3,304,400 per year.

For additional information on these and other impacts of the Devils Lake outlet on the Sheyenne River and downstream communities, see Pearson 2009c and 2010a (Attached).

Because sulfate levels in West Bay of Devils Lake are at 600 to 700 mg/L, the State Water Commission's 250 cfs Devils Lake outlet would be limited only by the capacity of the pumps, so the short term impacts of the increased flows and higher levels of contaminants (sulfates, TDS, phosphorus, hardness, chloride, mercury, arsenic, etc.) from the Devils Lake water could be significantly more severe than those identified by the Corps of Engineers for a 300 cfs outlet constrained by 600 cfs total flows and a 300 mg/L sulfate limit in the Sheyenne River.

EFFICACY OF A 250 CFS DEVILS LAKE OUTLET IN LOWERING THE LEVEL OF DEVILS LAKE

A 250 cfs Devils Lake outlet is unlikely to be substantially more effective in lowering the level of Devils Lake than the State Water Commission's demonstrably ineffective 100 cfs outlet because, under the North Dakota Department of Health's proposed amendment of its administrative rules, the sulfate limit in the Lower Sheyenne River downstream from Lake Ashtabula would remain at 450 mg/L (See Pearson, 2009c, 2010a, Attached).

Assistant North Dakota State Engineer Todd Sando claims that increasing the capacity of the Devils Lake outlet from 100 cfs to 250 cfs:

". . . could remove more than 6 inches of water annually from the lake." (MacPherson, 2009)

At Devils Lake's current surface area of 163,000 acres, the outlet would have to discharge 81,500 acre-feet per year in order to remove 6 inches of water from the lake. However, with sulfate levels in West Bay ranging from 600 to 700 mg/L, operation of the outlet at 250 cfs would replace the entire 69,000 acre-feet volume at the top Lake Ashtabula's conservation pool with Devils Lake water in just 4.2 months, at which time operation of the outlet would have to be suspended because releases of water with 600 to 700 mg/L of sulfate could not be made from Lake Ashtabula without violating the 450 mg/L sulfate limit in the Sheyenne River beginning 0.1 mile downstream from Baldhill Dam. What this means is that, once the sulfate level reaches 450 mg/L in Lake Ashtabula, subsequent discharges from the outlet would be limited by dilution of sulfate levels in the reservoir by natural flows in the Sheyenne River and management of the reservoir for flood control, downstream municipal water supplies and recreation. Of course, increasing the concentration of sulfates and other contaminants in the water released from Lake Ashtabula will increase water treatment costs for downstream communities. Consequently, it is unlikely that the 250 cfs outlet would remove more than an inch or so of water from the lake per year. To put this in perspective, Devils Lake rose 3.8 feet in the spring of 2009—but only 1.5 feet above the previous high on May 9, 2006—and it would take 5.6 years for the outlet operating at 250 cfs for 7 months every year to remove just last spring's record 587,000 acre-feet of inflows. (See Pearson, 2010a, pp. 10–14, Attached)

CONCLUSION

On February 10, 2010, North Dakota Congressman Earl Pomeroy visited Devils Lake and was reported as saying:

"The thing that really gets me about all the work we've done is we have another lake rise of 2–3 feet bringing a new host of problems that only get more difficult." (Bodakowski, 2010)

And Ramsey County Commissioner and the State's Devils Lake Outlet Downstream Acceptance Coordinator Joe Belford was reported as saying:

"I know congressman Pomeroy and the Government have been working hard and will continue to, but its not helping, we're losing the battle."

If, as State officials say, more than $800 million has been spent dealing with the rising water level at Devils Lake (Dwelle, et al., 2010) and the problems are only getting more difficult and we are losing the battle, then perhaps it is time to do something different.[1]

Instead of attempting to remove water after it already is in Devils Lake and after it has already caused damage, perhaps it is time to consider doing something to reduce the amount of water entering the lake in the first place. Nothing can be done about the weather, but something certainly could be done to reduce the runoff from the 378,000 acres of drained wetlands in the Devils Lake Basin. In my February 10, 2009 letter to the Senate Subcommittee on Energy and Water Development Chairman Byron Dorgan submitted as outside testimony for the record of the subcommittee's February 11, 2009 field hearing on "Determining what action must be taken to protect residents of the Devils Lake region from rising waters," I recommended that:

". . . the subcommittee address the one primary contributor to the rise in the level of Devils Lake that it can by directing appropriate Federal agencies with expertise in wetland hydrology and wetland restoration, such as the U.S. Environmental Protection Agency, the U.S. Department of Agriculture's Natural Resources Conservation Service, the U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers, to develop and implement a comprehensive, effective and scientifically sound wetland restoration program for the Devils Lake Basin." (Pearson 2009d)

I would like to reiterate that recommendation and add the U.S. Geological Survey to the list of Federal agencies that should be enlisted to prepare a wetland restoration program for the Devils Lake Basin.

The subcommittee should also ask the U.S. Environmental Protection Agency what it is going to do to assure that water quality is protected in the Sheyenne River with the North Dakota Department of Health's proposal to increase the maximum sulfate limit in the Upper Sheyenne River from 450 mg/L to 750 mg/L and the North Dakota State Water Commission's plan to increase discharges from the Devils Lake outlet from 100 cfs to 250 cfs.

In the meantime, continued expenditures on infrastructure protection requiring additional hundreds of millions of taxpayer dollars may be necessary because North Dakota State officials have refused for decades to address the problem of rising water levels in Devils Lake responsibly and truthfully (Pearson, 1985; 2010b, Attached).

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COMMENTS ON THE NORTH DAKOTA DEPARTMENT OF HEALTH'S JULY 15, 2009 PROPOSAL TO ADOPT AN EMERGENCY RULE ADDING A NEW SECTION TO NORTH DAKOTA ADMINISTRATIVE CODE CHAPTER 33–16–02.1 STANDARDS OF QUALITY FOR WATERS OF THE STATE TO CHANGE THE CLASSIFICATION OF THE UPPER SHEYENNE RIVER AND INCREASE THE MAXIMUM LIMIT FOR SULFATE IN THE RIVER FROM 450 MG/L TO 750 MG/L

INTRODUCTION

On July 15, 2009, the North Dakota Department of Health (Department of Health, Department) issued a "Notice of Intent to Adopt Administrative Rule" relating to "the Standards of Quality for Waters of the State, ND Admin Code ch. 33–16–02.1" (Glatt, 2009a). According to the Notice of Intent:

"The purpose of the proposed rule is to change the maximum level of sulfate in a segment of the Sheyenne River. The rule will change the maximum level of sulfate in the segment of the Sheyenne River that runs from its headwaters to 0.1 mile downstream from Baldhill Dam, including Lake Ashtabula, from 450 mg/L to 750 mg/L . . ." (Glatt, 2009a)

The Department of Health is proposing to add a new section to North Dakota Administrative Code Chapter 33–16–02.1 dealing specifically and exclusively with the "Maximum Sulfate Limit of Sheyenne River." The proposed new section would provide that:

"The quality of water in the Sheyenne River shall be that of a Class 1A stream except that the maximum limit of sulfate in the segment of the Sheyenne River that runs from its headwaters to 0.1 mile downstream from Baldhill Dam, including Lake Ashtabula, shall be 750 mg/L."

The sole reason and justification cited in the Department of Health's July 15, 2009 "Finding and Statement of Reason of the North Dakota Department of Health Regarding Proposed Rule Relating to Water Quality Standards" for permanently increasing the sulfate limit in the Upper Sheyenne River from 450 milligrams per liter (mg/L) to 750 mg/L is that Devils Lake rose a foot-and-a-half this spring from its previous high 3 years ago of 1,449.2 feet above mean sea level (msl) (Glatt, 2009b), and the Department is proposing:

". . . to initiate immediate action to address the situation by increasing flow from the Devils Lake outlet." (Glatt, 2009c)

The Department is proposing to accomplish this rule change under the authority of the emergency rules section of the Administrative Agencies Practice Act, North Dakota Century Code § 28–32–03 (Glatt, 2009c).

North Dakota Administrative Code Chapter 33–16–02.1 establishes "Standards of Quality for Waters of the State," and NDAC § 33–16–02.1–02 states:

"The purposes of this chapter are to establish a system for classifying waters of the State; provide standards of water quality for waters of the State; and protect existing and potential beneficial uses of waters of the State.

"The State and public policy is to maintain or improve, or both, the quality of the waters of the State and to maintain and protect existing uses. Classifications and standards are established for the protection of public health and environmental resources and for the enjoyment of these waters, to ensure the propagation and well-being of resident fish, wildlife, and all biota associated or dependent upon these waters, and to safeguard social, economical, and industrial development. Waters not being put to use shall be protected for all reasonable uses for which these waters are suitable. All known and reasonable methods to control and prevent pollution of the waters of this State are required, including improvement in quality of these waters, when feasible.

> "The 'quality of the waters' shall be the quality of record existing at the time the first standards were established in 1967, or later records if these indicate improved quality. Waters with existing quality that is higher than established standards will be maintained at the higher quality unless affirmatively demonstrated, after full satisfaction of the intergovernmental coordination and public participation provisions of the continuing planning process, that a change in water quality is necessary to accommodate important social or economic development in the area in which the waters are located. In allowing the lowering of existing quality, the department shall assure that existing uses are fully protected and that the highest statutory and regulatory requirements for all point sources and cost-effective and reasonable best management practices for nonpoint sources are achieved.

"Waters of the State having unique or high quality characteristics that may constitute an outstanding State resource shall be maintained and protected.

"Any public or private project or development which constitutes a source of pollution shall provide the best degree of treatment as designated by the department in the North Dakota pollutant discharge elimination system. If review of data and public input indicates any detrimental water quality changes, appropriate actions will be taken by the department following procedures approved by the environmental protection agency. (North Dakota Antidegradation Implementation Procedure, Appendix IV.)"

On August 30, 2002, North Dakota State Engineer Dale Frink submitted an application to the North Dakota Department of Health, under section 402 of the Clean Water Act, for a North Dakota Pollutant Discharge Elimination System Permit for the North Dakota State Water Commission's outlet from Devils Lake to the Sheyenne River (Frink, 2002a, 2002b). On the first U.S. Environmental Protection Agency form that he signed, Mr. Frink averred that:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment." (Frink, 2002a)

On the second form signed by Mr. Frink, he averred that:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." (Frink, 2002b)

In support of his application for a Clean Water Act section 402 permit for the State Water Commission's Devils Lake outlet, State Engineer Dale Frink submitted to the Department of Health a "State of North Dakota Water Quality Report for the Devils Lake Outlet Project." The only information submitted by Mr. Frink in support of his application dealing with the need to degrade water quality in the Sheyenne River by operation of the outlet in order to accommodate social or economic development was one cursory and unsubstantiated paragraph in the Water Quality Report for the Devils Lake outlet Project stating that:

"An outlet, if built and operated, reduces the chance of a natural overflow. This type of benefit could easily outweigh the cost of building and operating an outlet project. Under a wet scenario, if a State 100 cfs outlet project were to operate for 10 years, it will remove approximately 171,000 acre-feet of water. At elevation 1,447, that is approximately 17 inches off of Devils Lake. If the State's project has a cost estimate of $20–25 million, that would be enough of a reduction to pay for the project." (North Dakota State Water Commission, 2002)

Nevertheless, in conducting its antidegradation review for Mr. Frink's application, the Department answered, "Yes" to the question, "Has the applicant demonstrated that the proposed activity will provide important socioeconomic development in the area in which the affected waters are located?"

In its "Response to Comments for the Devils Lake Outlet Project," the department stated:

"In making a preliminary determination of socio-economic importance, the division will rely primarily on the demonstration by the applicant." (North Dakota Department of Health, 2003b)

However, Mr. Frink knew before he submitted the Water Quality Report on the Devils Lake Outlet Project to the Department of Health in support of his application for a Clean Water Act section 402 permit that the outlet operating for 10 years under a wet scenario would not remove 17 inches off the lake, that it would lower the level of the lake by only 4.8 inches, that it would not reduce the chance of a natural overflow, and that the reduction in the lake level would not pay for the project (Reinartz, 2002; Lee, 2007a, 2007b). Consequently Mr. Frink knowingly submitted deliberately false information in support of his application for a Clean Water Act section 402 permit for the outlet.

On August 22, 2003, North Dakota Department of Health Division of Water Quality Director Dennis R. Fewless approved North Dakota Pollutant Discharge Elimination System Permit ND–0026247 for the State Water Commission's Devils Lake outlet authorizing the intermittent discharge of surface water from Devils Lake to the Sheyenne River. The Department's issuance of a North Dakota Pollutant Discharge Elimination System permit for the outlet was based substantially on the deliberately false information submitted by Mr. Frink.

Following receipt of requests to reconsider the Department's approval of the permit, North Dakota Department of Health Environmental Health Section Chief L. David Glatt stated on January 28, 2004, that:

"Based on the additional comments received by this department, no changes are proposed for the Devils Lake Outlet Permit No. ND–0026247." (Glatt, 2004)

Under the conditions of the permit, which were designed to protect water quality in the Sheyenne River and preserve beneficial uses of the water (North Dakota Department of Health, 2003a), discharges from the outlet were limited to (1) May through November, (2) 100 cubic feet per second (cfs) or total flows in the Sheyenne River of 600 cfs, (3) maximum 7-day average sulfate concentrations in the Sheyenne River immediately downstream from the outlet of 300 mg/L, and (4) a maximum daily Total Suspended Solids level of 100 mg/L. The permit would expire on June 30, 2008. Constrained by those criteria, the outlet removed a total of 38.46 acre-feet of water from Devils Lake in 2005 (Frink, 2005) and it did not operate at all in 2006 (Frink, 2006).

On May 25, 2006, the North Dakota Department of Health issued a "Public Notice to Modify NDPDES Permit, Notice of Public Hearing on NDPDES Permit Modification" announcing a public hearing June 26, 2006, on a request from the North Dakota State Water Commission for modification of the permit to discharge Devils Lake surface water into the Sheyenne River (North Dakota Department of Health, 2006). The department proposed to modify the North Dakota Pollutant Discharge Elimination System permit that had been issued for the Devils Lake outlet on January 28, 2004, to:

- —Remove the limitation on operation of the outlet from May through November and replace it with a limitation to operation when the Sheyenne River is not ice-covered.
- —Remove the 100 mg/L maximum daily Total Suspended Solids limitation and replace it with a requirement that the outlet "shall be operated and maintained in accordance with sound engineering practices to minimize the contribution of suspended solids to the Sheyenne River."
- —Replace the downstream monitoring location on the Sheyenne River at a point "immediately downstream of the outlet" with the Bremen site approximately 15 miles downstream of the outlet.
- —Remove the 300 mg/L instream sulfate limitation at the monitoring location immediately downstream of the outlet and replace it with sulfate limitations in the Sheyenne River at Bremen of:
  - —300 mg/L when background sulfate concentrations in the river are <260 mg/L.
  - —1.15 times the background sulfate concentrations when background sulfate concentrations in the river are ≥ 1260 mg/L and ≤ 390 mg/L.
  - —450 mg/L when background sulfate concentrations in the river are >390 mg/L.

The department approved these permit modifications on August 16, 2006.

Operating under these modified permit conditions, the outlet removed a total of 298.18 acre-feet of water from Devils Lake in 2007, and it removed a total of 1,241 acre-feet in 2008. Therefore, the total amount of water removed from Devils Lake by the outlet operating under the conditions of the North Dakota Pollutant Discharge Elimination System permit issued and then modified by the Department of Health from 2005 through 2008 was 1,577.64 acre-feet. At a lake elevation of 1,450 feet and surface area of 163,000 acres, that is equivalent to a 0.01 foot (0.12 inch) reduction in the level of Devils Lake.

In June 2009, the North Dakota Department of Health vacated the North Dakota Pollutant Discharge Elimination System permit it had issued for the Devils Lake outlet (Anonymous, 2009a) and implemented an interim emergency rule raising the maximum sulfate level in the Sheyenne River to 750 mg/L (Glatt, 2009c; Browne, 2009).

The department is now proposing to add a new section to North Dakota Administrative Code § 36–16–02.1 to raise the maximum sulfate limit in the Upper Sheyenne River permanently to 750 mg/L in order to permit increased discharges from the Devils Lake outlet.

REASONS FOR THE PROPOSED EMERGENCY RULE AND THE DEPARTMENT'S FINDINGS ARE NOT VALID

According to the "Statement of Reason" section of the department's July 15, 2009, "Finding and Statement of Reason:"

"The probability of a natural water discharge from the east end of Devils Lake has increased substantially over the last year." (Glatt, 2009b)

U.S. Geological Survey data based on stochastic simulation computer model runs show that the probability of Devils Lake exceeding its natural overflow elevation of 1,459 feet within 10 years increased from 2.1 percent in October 2007 to 5.6 percent in May 2009. However, the department's "Statement of Reason" fails to address two important and relevant points regarding the probability of a natural overflow occurring. First, Devils Lake would have to rise to an elevation of 1,460 feet before the volume of the discharge would reach 300 cfs, and the probability of that occurring was 2 percent less than the probability of the lake reaching 1,459 feet (U.S. Army Corps of Engineers, 2002). In other words, the lake would have to rise a foot above its natural overflow elevation before the discharge would exceed the downstream water quantity impacts of the 250 cfs planned discharge of the State Water Commission's outlet. Second, the U.S. Army Corps of Engineers determined that there still would be a 4.6 percent chance of Devils Lake reaching its natural overflow elevation with its proposed 300 cfs Pelican Lake outlet in operation (U.S. Army Corps of Engineers, 2003). The Department claims that the probability of a natural discharge occurring from the east end of Devils Lake has increased substantially over the last year but it cites no data to demonstrate that operation of the State Water Commission's outlet under the proposed emergency rule would substantially reduce that probability.

In his July 13, 2009, letter to the chief of the department's Environmental Health Section regarding the Devils lake outlet, North Dakota State Engineer Dale Frink said:

"USGS studies indicate that the Devils Lake basin is currently in a wet cycle and has a 5 percent chance of overflowing to the Sheyenne River in the next 5 years or a 1 percent chance of overflowing by 2011." (Frink, 2009)

Mr. Frink's statement that Devils Lake currently is in a wet cycle is refuted by an April 23, 2008, Associated Press story reporting that:

"The past 6 months have been the direst on record in North Dakota, with the parched western part of the State suffering the most, the State climatologist says.

"Through Monday, the statewide average precipitation for the past 180 days was only 1.59 inches, or 39 percent of normal, and the direst since record keeping began 113 years ago, said Adam Akuza, the State climatologist.

"The latest U.S. Drought Monitor shows the western half of the State in moderate to extreme drought, with the eastern half listed as abnormally dry." (Associated Press, 2008)

and by an August 8, 2009 story in *The Jamestown Sun* reporting that:

"'We have the start of a mild El Niño now,' says Klaus Wolter, climatologist with the University of Colorado at Boulder and the National Oceanic and Atmospheric Administration. 'In short, just looking at winter weather, El Niño weather tends to be a bit warmer, dryer and less windy on the northern plains.'" (Norman, 2009)

Mr. Frink stated in his July 13, 2009 letter that:

"USGS studies indicate that [Devils Lake] . . . has a 5 percent chance of overflowing into the Sheyenne River in the next 5 years or a 1 percent chance of overflowing by 2011."

The U.S. Geological Survey's 2008 "Climate Simulation and Flood Risk Analysis for 2008–40 for Devils Lake, North Dakota" stated that:

"The generated traces were used to compute cumulative flood elevations for 2008–40 by computing the elevations that have a fixed probability of being exceeded sometime between now and a given future year. For example, *there is about a 1-percent chance of Devils Lake exceeding 1,459.9 feet* (0.9 foot above the natural spill elevation), a 5-percent chance of exceeding 1,455.7 feet, and a 10-percent chance of exceeding 1,453.8 feet *sometime between 2008 and 2015*. Although the risk of much higher lake levels in future years is relatively high there also is about a 50-percent chance it will not rise above 1,450 feet (less than 1 foot above the historical record level of 1,449.2 feet set in 2006) anytime during 2008–40." (Emphasis added) (Vecchia, 2008)

The U.S. Geological Survey's more recent data on cumulative exceedance probabilities based on stochastic simulation model runs show that the chance of Devils Lake exceeding its natural overflow elevation of 1,459 feet by 2010 is 0.2 percent and the chance of it exceeding 1,459 feet by 2014 is 3.2 percent.

It is instructive to note that the U.S. Geological Survey's recent cumulative exceedance probability data show that there is a 5.1 percent chance that Devils Lake will exceed elevation 1,458 feet by 2014 but the chance of it exceeding its natural overflow elevation of 1,459 feet by 2014 is only 3.2 percent. However, neither the State Water Commission nor the Governor, nor the Department of Health has taken any action to prevent the city of Devils Lake from pursuing a project to excavate one foot from the Tolna Coulee, the natural outlet from Devils Lake, to lower it from 1,459 feet to 1,458 feet (Associated Press, 2009; Oleson, 2009a, 2009b, 2009c, 2009d). What both Mr. Frink and the department fail to disclose is that the 5 percent chance of Devils Lake overflowing into the Sheyenne River in the next 5 years and the 1 percent chance of its overflowing by 2011 are the result of their failure to take action to prevent the excavation of a foot from the natural outlet, rather than the probability of the lake rising. By allowing the natural outlet to be lowered from 1,459 feet to 1,458 feet, the State Water Commission, the Governor and the Department of Health have deliberately tripled the probability of Devils Lake overflowing by 2011 from 0.2 to 0.6 percent, and they have increased the likelihood of Devils Lake overflowing by 2014 by 1.6 times from 3.2 percent to 5.1 percent.

The department's "Statement of Reason" states that:

"Just since the spring, Devils Lake has risen 3.8 feet to a record 1,450.7 feet, which is just 7 feet from an uncontrolled spill (at the recently excavated outlet elevation of 1,458 feet) into the Sheyenne and eventually the Red Rivers." (Glatt, 2009b)

From 1997 until 2008, the level of Devils Lake ranged between 1,446.4 feet (October 11, 2003) and 1,449.2 feet (May 9, 2006), a fluctuation of 2.8 feet, and the level has averaged about 1,447.6 feet. This spring, the lake rose 3.1 feet above the previous 10-year average but only 1.5 feet above the previous high—a fact pointed out by State Engineer Dale Frink in the first sentence of his July 13, 2009, letter to Department of Health Environmental Health Section Chief L. David Glatt (Frink, 2009).

As the area of the lake increases, the volume of water required for each incremental increase in its elevation also increases dramatically. As the U.S. Army Corps of Engineers and the North Dakota State Water Commission pointed out earlier this year:

". . . The lake currently covers 210 square miles. At an elevation of 1,459, it would be double in size and cover 423 square miles. It would take a large volume of water to reach this elevation. For comparison, to raise the lake from its current elevation of 1,446.8 to 1,450, would require 436,000 acre-feet of water. The 1997 flood was 522,000 acre-feet in volume. The lake volume increased approximately 1.9 million acre-feet between 1993 and 1999. To raise the lake to an elevation of 1,454 would require 1.15 million acre feet or more than double the volume of the flood of 1997." (U.S. Army Corps of Engineers and North Dakota State Water Commission, 2009)

In other words, to raise the level of the lake 3.8 feet from its current elevation would require more than twice as much water as was needed to raise it 3.8 feet from its 2008 elevation. Of course, it is true that inflows this spring exceeded those in 1997, but it also is true that to raise the lake to an elevation of 1,459 feet would require the addition of another 1.9 million acre-feet of water. This means that for the lake to reach its natural overflow elevation by 2011, as much water would have to enter the lake in the next 2 years as entered in the 7 years from 1993 to 1999. In the meantime, natural evaporation from the lake would increase from 424,000 acre-feet per year at its current area of 163,000 acres to 704,000 acre-feet per year at an area of 270,000 acres. That is 20 percent more than this year's record inflow.

It is instructive to note in this context that neither the Department of Health, nor the State Water Commission, nor the Governor has taken any action to prevent the city of Devils Lake from excavating a foot from the Tolna Coulee in order to lower the elevation at which Devils Lake would overflow to the Sheyenne River from 1,459 feet to 1,458 feet (Associated Press, 2009; Oleson, 2009a, 2009b, 2009c, 2009d). The city of Devils Lake already is protected to a lake elation of 1,455 feet by a $54 million dike built at public expense and which may be raised another 5 to 10 feet at an additional $73 million to $150 million in largely Federal funds (Bonham, 2009a; Nicholson, 2009), so it is clear that the city is not acting on its own. The failure of the Department of Health, the State Water Commission, the State Engineer or

State Water Commission Chairman Governor John Hoeven to take action to prevent the lowering of the natural outlet from Devils Lake from 1,459 feet to 1,458 feet confirms the hypocrisy of their alleged concern about the "catastrophic impacts" of a natural overflow to the Sheyenne River (Glatt, 2009b) and of the justification offered for department's proposed emergency rule.

Mr. Frink states in his July 13, 2009, letter that:

"Although the probability of having 3 consecutive years with precipitation similar to 2008 may be low, it is apparent that a wet cycle increasing lake levels can be expected to occur." (Frink 2009)

However, with peak levels of Devils Lake declining from 2006 to 2008, and with the probability of 3 consecutive years with precipitation similar to 2008 being low, there is no evidence to support Mr. Frink's claim that a "wet cycle increasing lake levels can be expected to occur."

In order to overflow to the Sheyenne River at the excavated outlet elevation of 1,458 feet, the combined Devils Lake/Stump Lake would have to rise another 7.3 feet from this year's high of 1,450.7 feet, increase another 1.5 million acre-feet in volume, and increase 115,000 acres in area to 261,000 acres. The reason the probability of this occurring is so low is that evaporation in the Devils Lake area averages 30.9 inches (2.6 feet) per year and during the period of high precipitation in the Devils Lake Basin from 1993 to 1999, inflows to Devils Lake averaged 317,000 acre-feet per year (U.S. Army Corps of Engineers, 2002) with a high of 522,000 acre-feet in 1997 (U.S. Army Corps of Engineers and North Dakota State Water Commission, 2008). At elevation 1,458 feet and an area of 261,000 acres, evaporation would remove 678,600 acre-feet of water per year from Devils Lake.

The department's "Statement of Reason" states that:

"A natural water discharge from the east end of the lake has the real potential of causing catastrophic impacts to downstream users due to the documented poorer water quality in the east end of Devils Lake." (Glatt, 2009b)

However, the department fails to weigh the one to 5 percent chance of adverse impacts to downstream users occurring as a result of a natural overflow against the 100 percent chance of adverse impacts to downstream users and the Sheyenne River occurring as a result of increasing the maximum allowable sulfate level in the Sheyenne River from 450 mg/L to 750 mg/L (U.S. Army Corps of Engineers, 2003).

The department's "Statement of Reason" states that:

"In less than 5 months, Devils Lake has flooded an additional 40,000 acres, which includes roads, businesses, homes, farmsteads and high quality agricultural land." (Glatt, 2009b)

The department cites no data to substantiate or quantify the statement and the statement is misleading because it fails to consider that only approximately 13,000 additional acres have been flooded since the lake's previous high of 1,449.2 feet in 2006, and it fails to mention that all of the land that has been flood since 1993 still is within the historic lake bed of Devils Lake.

The department's "Statement of Reason" states that:

"Devils Lake is expected to continue to rise, placing land, buildings and infrastructure and livelihoods in immediate danger of inundation." (Glatt, 2009b)

The statement is, again, unsubstantiated and speculative. The U.S. Geological Survey concluded in its 2008 flood risk analysis for Devils Lake:

". . . there is a 1-percent chance of Devils Lake exceeding 1,459.9 feet (0.9 foot above the natural spillway elevation), a 5-percent chance of exceeding 1,455.7 feet, and a 10-percent chance of exceeding 1,453.8 feet sometime between 2009 and 2015." (Vecchia, 2008)

The U.S. Geological Survey's more recent cumulative exceedance probability data show that there is a 45.2 percent probability that the lake will not exceed elevation 1,452 feet in 5 years, a 74.4 percent probability that it will not exceed elevation 1,454 feet in 5 years, an 87.8 percent probability that it will not exceed 1,456 feet in 5 years, a 94.9 percent probability that it will not exceed elevation 1,458 feet in 5 years and a 96.8 percent probability that it will not exceed 1,459 feet in 5 years.

The department has cited no data to substantiate its claim that the lake is expected to continue to rise, or to identify or quantify which and how much land, buildings and infrastructure would be placed in immediate danger of inundation. It also does not specify how livelihoods would be "inundated."

The department's "Statement of Reason" states that:

"Rising lake levels are stressing the capacity of existing dike systems, roads acting as dikes and other structures not designed to retain water. Their failure would result in additional flooding of cities and rural areas, impacting land productivity as well as municipal and rural infrastructure." (Glatt, 2009b)

The dike protecting the city of Devils Lake is built to an elevation of 1,460 feet and is designed to provide protection to a lake elevation of 1,455 feet, with 5 feet of freeboard. Devils Lake currently is at an elevation of 1,450 feet. Clearly, the capacity of the existing dike system is not being stressed by a lake level 5 feet below its design capacity and 10 feet below its crest. Nevertheless, the U.S. Army Corps of Engineers currently is evaluating options for raising the crest of the dike protecting the city of Devils Lake by 5 to 10 feet to an elevation of 1,465 to 1,470 feet to provide protection to a lake level of 1,459 feet with 5 to 10 feet of freeboard (Bonham, 2009a, Nicholson, 2009).

The department also neglects to mention that the *Devils Lake Daily Journals* reported on May 26, 2009, that:

"Senators Kent Conrad and Byron Dorgan announced last week that they have successfully secured emergency funding to shore up roads in the Devils Lake basin. The $40 million in Federal funding approved by Congress will be used to strengthen and raise the roads acting as dams in the Devils Lake basin.

"The funding announced today is in addition to the $42 million in Federal assistance the delegation announced on April 30 from the Emergency Relief for Federally-Owned Roads (ERFO) program. That funding was specifically targeted to repair and raise Bureau of Indian Affairs (BIA) roads . . ." (Anonymous, 2009b)

The Department of Health and Environmental Health section chief L. David Glatt obviously were fully aware that measures to address the Devils Lake Dike and roads acting as dikes already were underway more than a month before they released their "Finding and Statement of Reason," and that raising the specter of their failure was a deliberate fabrication designed to justify increasing the discharge from the Devils Lake outlet and degrading water quality in the Sheyenne River.

The department's "Statement of Reason" states that:

"Spring runoff added an additional 600,000 acre-feet of water to Devils Lake. Stabilizing the increasing lake levels may take several years to be effective, requiring the State to initiate immediate action to counteract the record volume increase." (Glatt, 2009b)

With the sulfate level at 700 mg/L in West Bay of Devils Lake and the department's proposal to raise the maximum sulfate level in the Sheyenne River to 750 mg/L, there would be no limit on the amount of water that could be discharged from the State Water Commission's Devils Lake outlet. Operating at its current 100 cfs maximum capacity from May through November, the outlet theoretically would be able to remove 41,650 acre-feet of water per year from Devils Lake, which means that it would take 14 years for the outlet to remove the 600,000 acre-feet of water from this spring's runoff. With the State Water Commission's plan to increase the capacity of the outlet to 250 cfs (MacPherson, 2009), it would take 5.6 years to remove the 600,000 acre-feet of water from this spring's runoff. However, the department's justification for increasing the maximum sulfate limit in the Sheyenne River so the outlet can discharge more water is not based on just this spring's runoff, which already is in the lake, but it is based on the unsubstantiated claim that "Devils Lake is projected to continue to rise." But, with 5.6 to 14 years required just to remove this spring's runoff, it is clear that the outlet will do little to "stabilize the increasing lake levels" or "counteract the record volume increase." On the other hand, natural evaporation from the expanding surface area of the lake will be far more effective in stabilizing and eventually lowering the lake while avoiding the costs (increasing pumping capacity and operating costs and increased downstream water treatment costs) and adverse downstream environmental impacts associated with the Department's proposal to increase the maximum sulfate limit in the Upper Sheyenne River from 450 mg/L to 750 mg/L.

North Dakota Department of Health Environmental Health Section Chief L. David Glatt states in his "Finding" that:

"I find that emergency rulemaking to adopt a rule relating to the Standards of Quality for Waters of the State, ND Admin Code ch 33–16–02.1, was necessary because imminent peril threatened public health, safety, or welfare, which could be abated by emergency effectiveness." (Glatt, 2009b)

but nowhere in his "Statement of Reason" does Mr. Glatt cite any substantive evidence to support his finding that the rising level of Devils Lake threatens public

health, safety or welfare or that the alleged threats could be abated by increasing the maximum level of sulfates in the Sheyenne River from 450 mg/L to 750 mg/L in order to permit increased discharges from the Devils Lake outlet. Mr. Glatt's "Finding and Statement of Reason" are not only devoid of substance and substantiation, but they are refuted by the facts.

THE DEPARTMENT'S FINDING THAT EMERGENCY RULEMAKING IS NECESSARY IS NOT SUBSTANTIATED AND IS NOT VALID

North Dakota Department of Health Environmental Health Section Chief L. David Glatt states in his July 15, 2009, letter to North Dakota Governor John Hoeven that:

"In an effort to address the widespread flooding impacts in the Devils Lake region, the department finds that emergency rule making is necessary and is requesting the authority to implement interim emergency rules to reclassify stream water quality standards in a portion of the Sheyenne River. This action would allow an immediate increase of discharge from the west end of Devils Lake in an effort to stabilize or decrease lake levels, thus reducing the impact of flooding. Under the authority of NDCC § 28–32–03, emergency rules are appropriate if an imminent peril threatens public health, safety or welfare which would be abated by emergency effectiveness. With your approval, the Department of Health has the authority to determine that emergency rule-making is necessary. As part of the authority provided under NDCC 28–32–03, we must declare that the proposed rule be an interim final rule. It must be filed with the Legislative Council to be valid and finalized within 6 months after the completion of an appropriate public participation process." (Glatt, 2009c)

However, in the opening paragraph of his July 15, 2009, letter to the Governor, Mr. Glatt states:

"The North Dakota Department of Health recently received letters from the North Dakota State Water Commission and the city of Devils Lake describing widespread flood impacts affecting the environment, economic stability and public health in the Devils Lake region . . . The letters describe the need for an emergency response to flood conditions and request the department to initiate immediate action to address the situation by increasing flow from the Devils Lake outlet.

The following issues are of concern:" (Glatt, 2009c)

The issues of concern which Mr. Glatt says were raised in the letters from the State Water Commission and the city of Devils Lake and which he listed in his July 15, 2009, letter to the Governor are exactly the same, word for word, as the reasons listed in Mr. Glatt's July 15, 2009, "Findings and Statement of Reason for the North Dakota Department of Health Regarding Proposed Rule Relating to Water Quality Standards" discussed above. It is evident, therefore, that Mr. Glatt's July 15, 2009, finding "that emergency rulemaking to adopt a rule relating to the Standards of Quality of Waters of the State, ND Admin Code ch 33–16–02.1, was necessary because imminent peril threatened public health, safety, or welfare, which could be abated by emergency effectiveness" was not based on an independent analysis by the department of the evidence, but was based simply on a reiteration of the unsubstantiated claims of parties with a vested interest in the Devils Lake outlet.

It is instructive to note in this context that neither the July 7, 2009, letter to Mr. Glatt from the city of Devils Lake (Bott, 2009), nor the July 15, 2009, letter from the State Water Commission (Frink, 2009) cites any credible evidence that "imminent peril threatened public health, safety or welfare" as a result of the 3.8 feet rise in Devils Lake this spring, or that if an "imminent peril" did exist, it could be abated by the proposed rule to raise the maximum sulfate level in the Sheyenne River from 450 mg/L to 750 mg/L.

The 587,000 acre-feet of increased volume in Devils Lake and Stump resulting from this past spring's runoff cited in Mr. Frink's letter (Frink, 2009) already is in the lake, so it is too late to abate any "imminent peril," if one existed, from those inflows. And even if there were "imminent peril" from those inflows, it would take 14 years operating at 100 cfs, or 5.6 years operating at 250 cfs, for the outlet to remove those in 587,000 acre-feet of water.

Mr. Bott states in his July 7, 2009, letter that:

". . . we are concerned about the economic vitality of the area should the lake continue to rise and inundate additional farmland and homes." (Bott, 2009)

However, his concern about the "economic vitality of the area" is not based on any "imminent peril," but on unfounded speculation about the lake continuing to rise.

It is relevant to note in this context that the influx of some $600 million of primarily Federal funds into the Devils Lake area since 1993 has "provided a significant boost to some elements of the local economy" (U.S. Army Corps of Engineers, 2002). It is not surprising, therefore, that the Devils Lake Daily Journal quoted Devils Lake Economic Director Jim Dahlen in 2000 as saying:

"The challenge we have is statistically the (flooding) impact doesn't show up real well in areas of taxable sales and services. Our unemployment rate is very low, well below the national average. And the average wage continues to rise. It's a hard thing to show what impact the flooding's had." (Anonymous, 2000)

THE DEPARTMENT'S PROPOSED EMERGENCY RULE IS IMPROPER AND CONTRARY TO LAW

The Emergency Rule Does Not Comply With the Administrative Agencies Practices Act

The department cites North Dakota Century Code Chapter 28–32, the Administrative Agencies Practice Act, as the authority "to implement interim emergency rules to reclassify stream water quality for a portion of the Sheyenne River" and states that:

"Under authority of NDCC § 28–32–03, emergency rules are appropriate if an imminent peril threatens public health, safety and welfare which would be abated by emergency effectiveness." (Glatt, 2009c)

However, as discussed above, neither the North Department of Health, nor the North Dakota State Water Commission, nor the city of Devils Lake has cited any evidence that "an imminent peril threatens public health, safety and welfare" at Devils Lake, or that any peril that might exist would be abated by the proposed emergency rule.

The Emergency Rule Violates North Dakota Administrative Code § 33–16–02.1–02

NDAC § 33–16–02.1–02 specifies that:

"The purposes of this chapter are to establish a system for classifying waters of the State; provide standards of water quality for waters of the State; and protect existing beneficial uses of waters of the State.

"The State and public policy is to maintain or improve, or both, the quality of the waters of the State and to maintain and protect existing uses. Classifications and standards are established for the protection of public health and environmental resources and for the enjoyment of these waters, to ensure the propagation and well-being of resident fish, wildlife and all biota associated or dependent upon these waters, and to safeguard social, economical, and industrial development. Waters not being put to use shall be protected for all reasonable uses for which these waters are suitable. All known and reasonable methods to control and prevent pollution of the waters of this State are required, including improvement in quality of these waters, when feasible."

Violation of State and Public Policy

The proposed emergency rule to increase the maximum level of sulfate in the Upper Sheyenne River from 450 mg/L to 750 mg/L clearly violates the State and public policy to maintain or improve, or both, the quality of the waters of the State.

Failure to Maintain and Protect Existing Uses and Safeguard Social, Economic and Industrial Development

The Department of Health stated in its 2003 "Statement of Basis, Devils Lake Outlet ND–0026247" for the issuance of a North Dakota Pollutant Discharge Elimination System Permit for the State Water Commission's Devils Lake outlet, that the U.S. Army Corps of Engineers' Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement:

". . . includes background information on hydrology, natural resources and other evaluations that are relevant to the consideration of this discharge permit."

and:

"A primary consideration when evaluating any outlet option has been the potential to degrade water quality in the Sheyenne River, Lake Ashtabula and the Red River. To consider the numerous variables and contributing factors governing the quality of water bodies extending across a large area, computer based models become a necessary tool. The Corps has developed a modeling system to evaluate Devils Lake outlet options. The model considerations and techniques are described in Appendix A of the Integrated Planning Report and Environmental Impact State-

ment for Devils Lake, North Dakota. The applicant, State Water Commission, provided the Corps model output specific to their outlet project as part of the permit application. The modeling results were considered by the department in selecting parameters for limiting and monitoring the permit." (North Dakota Department of Health, 2003a)

The department's proposed emergency rule would allow the Devils Lake outlet to operate at its planned maximum capacity of 250 cfs with discharges constrained only by a 750 mg/L maximum sulfate limit in the Sheyenne River. The U.S. Army Corps of Engineers' Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement (FEIS) did not evaluate the impacts of a 250 cfs West Bay outlet constrained only by a 750 mg/L sulfate limit in the Sheyenne River, but it did examine the impacts of a 300 cfs Pelican Lake outlet constrained by a 300 mg/L limit in the Sheyenne River. Water quantity impacts of a State Water Commission West Bay outlet operating at 250 cfs under a 750 mg/L sulfate limit in the Sheyenne River would be significantly greater than those of a 300 cfs Pelican Lake outlet constrained by a 300 mg/L sulfate limit because, with sulfate in the West Bay at around 700 mg/L, the operation of the State outlet would be unrestricted, but the Pelican Lake outlet would be restricted by the 300 mg/L sulfate limit to discharges of 0 to 100 cfs for 3 months of the 7 month operating season (U.S. Army Corps of Engineers, 2002). The acute water quality impacts of the State Water Commission's West Bay outlet constrained only by a 750 mg/L sulfate limit in the Sheyenne River would be proportionately (up to 250 percent) more severe than a Pelican Lake outlet constrained by a 300 mg/L limit in the Sheyenne River, and the cumulative impacts (pollutant loading) would be much more severe. It is instructive to note, therefore, that the impacts on existing uses of the Sheyenne River identified by the Corps for a 300 cfs Pelican Lake Outlet constrained by a 300 mg/L sulfate limit in the Sheyenne River include:

—"An outlet to the Sheyenne River could also affect recreation along the river by increasing flows and perhaps hazardous condition for canoeists and swimmers. It could also reduce the aesthetics of the riparian zone by accelerating erosion-deposition processes along the river or by affecting vegetation with higher ambient salinity levels. (FEIS, p. 6–47)

—". . . an outlet could exacerbate flooding along the Sheyenne River with consequent damage to transportation infrastructure, including roads and bridges. (FEIS p. 6–49)

—"As in the case of an overflow, farms that withdraw water from the Sheyenne River or the Red River for irrigation could suffer reduced crop yields from the lower river water quality associated with an outlet. Exacerbated flooding in the Sheyenne River could damage agricultural property, including lands, equipment, and structures . . . (FEIS p. 6–49)

—"An outlet from Devils Lake could diminish property values along the Sheyenne River. The potential adverse impacts to property values would be based on damage in the riparian zone, exacerbated flood risks, and reduced water quality for agriculture or recreation.

—"Based on analysis of the available data regarding the operations of the eight affected municipal water treatment facilities, a computer spreadsheet model was developed to estimate the annual increase in cost that can be expected at each facility due to the change in water quality. Hardness was identified as the major water user concern associated with an outlet. Ion exchange would be needed to treat sulfates but, due to the limited water quality effects resulting from a 300 mg/L sulfate constrained outlet, it was determined that softening was adequate treatment for water users. Cost increases would result from increased softening costs (due to increased chemical feed rates and increases in sludge handling and disposal), and increased capital and operations costs if treatment or an alternative water supply is required to restore the treatment facility finished water quality to without-outlet conditions.

—"Modeling showed the total annualized costs for increased softening would range from $25,000 per year to $56,000 per year, depending on the modeled water quality future. The total annualized cost for capital improvements or alternate source water development required to bring the with-outlet product water to the water quality of without-outlet product water ranged from $1,757,000 per year to $3,304,000 per year. Sulfate concentration is not a major concern along the Sheyenne or Red Rivers with the Pelican Lake outlet.[1] In

[1] However, sulfate concentration in the Sheyenne River under the Department's emergency rule increasing the maximum level to 750 mg/L is a major concern. (Browne, 2009; MacPherson, 2009)

most cases, treatment by ion exchange was found to be the least-cost alternative if without-outlet product water is required. (FEIS p. 6–51)

—"Interviews were conducted with all of the industrial river water users along the Sheyenne River and the Red River of the North. Two were expected to incur increased costs as a result of the Devils Lake outlet operations. The sugar beet processing facility is expected to have increased lime softening costs as a result of the outlet. The coal-fired power plant's increased costs relate to additional need for ion exchange water purification for boiler water. On the basis of one of the sample water quality data sets, annualized costs would be expected to be $1,200 per year for the sugar beet processing facility and $30,700 per year for the power plant. (FEIS p. 6–52)

—"Extended high flows from Baldhill Dam may result in problems related to the ability to drain the fish ponds at Baldhill Dam and Valley City National Fish Hatcheries. Flows around 700 to 800 cfs will prevent the ponds from being drained. (FEIS p. 6–52)

—"Induced floodplain salinization resulting from the rising water tables of floodplain and adjacent soils in the Sheyenne River valley above a 'critical depth.' (FEIS p. 6–67)

—"Additional salt loading to the floodplain could result from both overbank flooding with mixed Devils Lake/Sheyenne River water and intrusion of this water into adjacent floodplain soils as infiltrated floodwater and groundwater flow. Seepage outflow of mixed Devils Lake/Sheyenne River water could produce additional salt loading to adjacent floodplain soils during periods when the river is contained within the channel. (FEIS p. 6–67)

—"The outlet would result in increased salinity hazards associated with use of the water for irrigation purposes." (FEIS p. 6–72)

Of course, increasing the costs of maintaining existing uses does not protect those uses. And, the Department of Health has cited no evidence to demonstrate that its proposed emergency rule to increase the maximum level of sulfates in the Sheyenne River to from 450 mg/L to 750 mg/L in order to permit higher discharges from the Devils Lake outlet will not result in even more severe adverse impacts to existing uses of the Sheyenne River and Red River than those identified by the U.S. Army Corps of Engineers for a 300 cfs Pelican Lake outlet constrained by a 300 mg/L sulfate limit in the Sheyenne River.

Failure to Ensure Propagation and Well-being of Resident Fish, Wildlife and Biota

In its Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement, the U.S. Army Corps of Engineers identified the following adverse impacts on fish, wildlife and biota resulting from the operation of a 300 cfs Pelican Lake outlet constrained by a 300 mg/L sulfate limit in the Sheyenne River.

—"Operation of the Pelican Lake outlet would result in a substantial change in the flow regime of the Sheyenne River. Discharges of up to 300 cfs over a major portion of the summer would result in a five to tenfold increase in summer/fall flows along the Sheyenne River. Increased flows throughout the summer would result in changes in river stage on the Sheyenne and Red Rivers. (FEIS p. 6–56)

—". . . the outlet could result in up and down flows with sudden and extreme fluctuations in flow for much of a 50-year period of operation. These are the types of situations that make it difficult for species to adapt to habitat conditions. (FEIS p. 6–56)

—"Operation of a Pelican Lake outlet would affect both the water quality aspects and the physical characteristics of aquatic habitat on the Sheyenne River. While water quality constituents would not exceed tolerance levels for aquatic fauna in the Sheyenne or Red River, many constituent levels would be dramatically increased over baseline conditions. Water quality modeling indicates that the level of these constituents would increase as much as 100 percent during pumping. (FEIS p. 6–57)

—"Changes in habitat composition and availability would result in changes in species composition and abundance. There may be some lost year classes of fish and declines in invertebrate populations. (FEIS p. 6–59)

—"The changes on the Sheyenne River in water quality, hydrology, geomorphology, and habitat could result in substantial changes in or stress to aquatic biota . . . The outlet operation would also cause loss of spawning and nursery habitat, increased erosion, and changes in channel morphology. Increases in channel width may result in less available habitat once outlet operation ceases. (FEIS p, 6–59)

—"The loss of habitat due to increased flows, changes in channel geometry, loss of overbank cover and sedimentation, coupled with changes in water quality and algal growth, would all contribute to a substantial change in the aquatic community present in the Sheyenne River. Projected water quality and quantity changes associated with outlet operation may adversely influence fish reproduction and result in lost-year classes. The threshold chloride levels for some aquatic species, such as mussels, would be approached with operation of an outlet; however, no direct effects due to increased chloride levels are anticipated. The cumulative result of all of these changes would be a decrease in diversity of aquatic species in the Sheyenne River. (FEIS p. 6–59)

—"With the increase in flow, some change is expected in width and depth, and erosion would probably increase. Expected habitat changes include a decline of shallow pool, shallow riffle, and medium pool habitats, and an increase in fast riffle, raceway, and deep pool habitats in spring, summer and fall. Increases in summer and fall discharges reduce the slower flowing fish nursery habitat (slow riffle, shallow and medium pool guilds.) (FEIS p. 6–59)

—"Monthly discharge would be highly altered during summer and fall, and then decline dramatically in winter . . . Fish would be affected by the change to deep/fast less usable habitat in all seasons, and the loss of summer and fall habitat for shallow, medium and deep pool guilds. Unionids and other invertebrates would be affected by the decrease in moderately flowing habitat. The increase in raceway and fast riffle habitat may benefit the tricopteran guild, but overall invertebrate diversity (low gradient guild) would be negatively affected. Macrophytes, although not common in this reach of the river, probably would be scoured by high flows. Unionids would most likely be affected by the dramatic decline between fall and winter flows. Many unionids would not survive these changes during outlet operation. (FEIS p. 6–60)

—"Effects in Lake Ashtabula include reduced retention time, increased nutrient loading, increased movement of fish out of the lake, increased salinity, and increased storage of water. The outlet would reduce the storage time in Lake Ashtabula and increase turnover rate. This could affect walleye production and increased movement of some fish out of Lake Ashtabula and into downstream habitats . . . (FEIS p. 6–60)

—"The operation of an outlet would affect river stages, groundwater levels near the river, erosion, availability of aquatic habitat, river access, and river crossings. (FEIS p. 6–60)

—"In summary, changes in hydrology would be significant with a Pelican Lake alternative because large amounts of water could be discharged during wet periods in the Devils Lake basin due to improved water quality. Erosion will be greater, summer nursery habitat will be less, unproductive habitat will increase in summer and fall, and change in flow magnitude between fall and winter will be greater. Therefore, aquatic communities may survive the water quality changes of the alternative, only to be affected by the change in habitat and hydrology. The changes in the aquatic community would persist for many years after outlet operation has ceased. (FEIS p. 6–61, 6–62)

—"After outlet operation ceases, slower flowing, shallow habitats would return and the upper reach would return to less hydrologically stable condition. In addition, after a number of years of outlet operation the channel would have changed, becoming wider and deeper, such that the reduced water levels would result in less available wetted habitat (and higher temperatures) during low flow conditions. The increased flow associated with the operation of an outlet would also alter habitat distribution and probably result in some erosion and deposition. These changes would affect habitat conditions and availability when the outlet ceases operation. Only a few small permanent tributaries drain into the upper Sheyenne River, and their suitability as unionid refugia is not known. Fish hosts are prevented from carrying glochidia upstream past Baldhill Dam. Unless unionid refugia occur in the small tributaries, fauna is unlikely to recolonize to pre-project conditions. Fish species that benefited from increased spawning and nursery habitat associated with higher flow would be negatively affected by the lack of those habitats with lower flows. Invertebrate fauna may recover over time. However, species composition would probably differ from prepumping conditions. (FEIS p. 6–62)

—"Vegetation in the riparian corridor may be affected by changes in groundwater elevation and quality, changes in frequency and duration of flooding and induced erosion associated with increased flows. Based on the assumption of a one-quarter mile area of influence, groundwater changes could potentially affect about 112,000 acres of riparian lands along the Sheyenne River . . . In rare

instances, there could be overbank flooding due to unforeseen rainstorms and the inability to turn the outlet off in time. (FEIS p. 6–63)

—". . . it is likely that a large portion of the riparian vegetation would shift from woods to a more open community type, resulting in a concurrent change in animal species composition along the river. Changes in water quality to a more saline condition could also influence the amount and type of vegetation along the river. Some of the larger overstory forest trees may survive a year or longer, but with reduced vigor. Once the outlet operation is completed, recovery of these areas through succession would occur, which could take decades in some areas." (FEIS p[. 6–65)

The Department of Health has cited no evidence that the adverse impacts on fish and wildlife and biota resulting from its emergency rule to raise the maximum level of sulfate in the Sheyenne River to 750 mg/L will not be even more severe than these identified by the U.S. Army Corps of Engineers for a Devils Lake outlet operating under a 300 mg/L sulfate constraint in the Sheyenne River.

Failure to Maintain and Protect Waters of the State Having Unique or High Quality Characteristics

North Dakota Administrative Code § 33–16–02.1–02 requires that:

"Waters of the State having unique or high quality characteristics that may constitute an outstanding State resource shall be maintained and protected."

The U.S. Army Corps of Engineers' Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement describes the natural resource characteristics of the Sheyenne River as follows:

"The Sheyenne River provides spawning habitat and nursery areas for forage fish, as well as a migrational avenue for sport fish, including channel catfish, northern pike, walleye, bass, and crappie especially during high water conditions. The Sheyenne River contains more species of fish than any other North Dakota tributary, with over 50 identified. The river itself and a number of small reservoirs created by low-head dams provide fishing opportunities for nearby residents. About 3 percent of the angler-days of fishing in North Dakota are spent on the Sheyenne River. Commonly harvested fish include northern pike, walleye, channel catfish, black bullhead, yellow perch, and bluegill. Baldhill Creek, a tributary to the Sheyenne River, contains the only known population of trout perch in North Dakota. There are nine species of freshwater mussels inhabiting the Sheyenne River.

"The riparian areas along the Sheyenne River provide valuable habitat for a variety of wildlife species. Game species found along the river's riparian corridor and adjacent uplands include white-tailed deer, moose, wood duck, dabbling duck, pheasant, greater prairie chicken, turkey, squirrels and rabbits. Furbearing species and migratory non-game birds use the river corridor for breeding, feeding, and migration.

"In summary, *the Sheyenne River provides significant and unique aquatic and terrestrial resources. It is one of the most heavily wooded areas of the State and contains one of the largest and most diverse fisheries.*" (Emphasis added) (U.S. Army Corps of Engineers, 2003)

However, the Department of Health summarily dismissed the overwhelming and unequivocal evidence that the Sheyenne River constitutes an outstanding State resource in its 2003 "Response to Comments for the Devils Lake Outlet Project" with the arbitrary and irrelevant assertion that:

"The Sheyenne River is *not a designated* outstanding State resource as defined in Appendix IV procedures for Category 3 Waters of the North Dakota Water Quality Standards. This section delineates the specific process which must be followed for a water body to be designated as outstanding." (Emphasis added) (North Dakota Department of Health, 2003b)

However, the requirements of NDAC § 33–16–02.1–02 ¶ 2c are not limited to waters of the State that have been "designated" as an outstanding State resource, but they apply to any waters that "may constitute" an outstanding State resource. The Department has cited no evidence what-so-ever to refute the information from the U.S. Army Corps of Engineers' Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement documenting the Sheyenne River's unique and high quality characteristics and the clear and overwhelming evidence that those unique and high quality characteristics will not maintained and protected under the department's proposed emergency rule.

An Emergency Rule is Not the Proper Procedure for Modifying Water Quality Standards

North Dakota Administrative Code § 33–16–02.1–02 states that:

"The State and public policy is to maintain or improve, or both, the quality of the waters of the State and to maintain and protect existing uses. Classifications and standards are established for the protection of public health and environmental resources and for the enjoyment of these waters, to ensure the propagation and well-being of resident fish, wildlife and all biota associated or dependent upon these waters, and to safeguard social, economical, and industrial development . . ."

NDAC § 33–16–02.1–09, "Surface water classifications, mixing zones and number standards," then establishes six classifications for surface waters of the State, including Class I, Class IA, Class II, and Class III streams, Wetlands and Lakes. The principal difference between Class I and Class IA streams is that, in addition to coagulation, settling, filtration and chlorination, Class IA streams "may also require softening to meet the drinking water requirements of the department." For Class I streams, the maximum limit for chlorides is 100 mg/L and the maximum limit for sulfate is 250 mg/L. For Class IA streams, the maximum limit for chlorides is 175 mg/L and the maximum limit for sulfate is 450 mg/L. The standards for Class II streams are the same as for Class IA streams except the maximum limit for chlorides is 250 mg/L, and for Class III streams the maximum limit for sulfate is 750 mg/L. No exemptions from these standards are listed for any stream in the State. The Sheyenne River is classified as a Class IA stream throughout its length.

It clearly is not sound public policy to establish water quality standards for the classification of streams in the State, and then add sections to the rules to provide piecemeal exceptions to those standards. However, the proposed emergency rule to raise the maximum sulfate limit for the Class 1A segment of Sheyenne River above Baldhill Dam and 0.1 mile below the dam to that of a Class III stream while leaving the rest of the river beginning 0.1 mile below the dam to its terminus at the Red River a Class IA stream is not simply bad public policy, but it is a scientific impossibility and regulatory nonsense because there is no way suddenly to lower the sulfate level in the river 0.1 mile below Baldhill Dam from 750 mg/L to 450 mg/L. Consequently, although the emergency rule applies only to the Upper Sheyenne River, it would result in automatic violation of the standard on the Lower Sheyenne River as well.

North Dakota Administrative Code § 33–16–02.1–07, "Classification of waters of the State," states that:

"Classification of waters of the State shall be used to *maintain and protect* the present and future beneficial uses of these waters. Classification of waters of the State shall be made whenever new or additional data warrant the classification or a change of an existing classification." (Emphasis added)

The language is clear that the purpose of the classification of waters of the State is to maintain and protect present and future beneficial uses of those waters, and there is no provision for changing the classification for reasons other than to maintain and protect those uses. Notably, there is no provision for changing the classification to permit degradation of the quality of the waters of the State. Moreover, the department has cited no new or additional data to warrant a change in the existing classification of the Upper Sheyenne River. Indeed, the only basis cited for the emergency rule to raise the maximum sulfate limit of the Upper Sheyenne River from 450 mg/L to 750 mg/L is requests from the State Water Commission and the city of Devils Lake to raise the sulfate limit in order to permit increased discharges from the Devils Lake outlet. There are no new or additional data on water quality constituents in the Upper Sheyenne River to warrant a change in its existing classification.

Further evidence that NDAC Chapter 33–16–02.1 does not provide for changing the classification of streams to permit degradation of water quality is found in NDAC § 33–16–02.1–05, which includes a specific provision for "Variances" and states:

"Upon written application by the responsible discharger, the department finds that by reason of substantial and widespread economic and social impacts the strict enforcement of State water quality criteria is not feasible, the department can permit a variance to the water quality standard for the affected segment. The department can set conditions and time limitations with the intent that progress toward improvements in water quality will be made. This can include interim criteria which must be reviewed at least once every 3 years. A variance will be granted only after

fulfillment of public participation requirements and environmental protection agency approval. A variance will not preclude any existing use."

Clearly, instead of adopting an emergency rule permanently to increase the maximum sulfate level in the Upper Sheyenne River from 450 mg/L to 750 mg/L, the proper procedure would be for the responsible discharger, the State Water Commission, to submit a written application to the department for a variance of the water quality criteria for the affected segment of the Sheyenne River, and then for the department to set conditions and time limitations to assure progress toward improvements in the water quality in the river. It was improper for the department to propose the emergency rule to amend NDAC Chapter 33–16–02.1 when NDAC Chapter 33–16–02.1 already contains a specific provision for addressing the subject of the emergency rule. Indeed, the emergency rule appears to be deliberately designed to circumvent NDAC § 33–16–02.1–05 in order to permit permanent degradation of water quality in the Sheyenne River.

THE DEPARTMENT'S ASSERTION THAT A REGULATORY ANALYSIS IS NOT REQUIRED IS ERRONEOUS

The new section of North Dakota Administrative Code Chapter 33–16–01.1 that the department is proposing to adopt through emergency rulemaking deals with the "Maximum Sulfate Limit of Sheyenne River" and provides:

"The quality of water in the Sheyenne River shall be that of a Class 1A stream, except the maximum limit of sulfate in the segment of the Sheyenne River that runs from its headwaters to 0.1 mile downstream from Baldhill Dam, including Lake Ashtabula, shall be 750 mg/L."

However, no means is specified, and none is available, for reducing a maximum sulfate level of 750 mg/L in the Sheyenne River 0.1 mile downstream from Baldhill Dam to a maximum of 450 mg/L 0.2 mile downstream from Baldhill Dam. Indeed, the sulfate level in the Upper Sheyenne River and Lake Ashtabula will determine the sulfate level in the entire reach of the Lower Sheyenne River from Baldhill Dam to the Red River.

The department states in its "Notice of Intent to Adopt Administrative Rule" signed by Mr. Glatt on July 15, 2009, that:

"The proposed rule is not expected to have an impact on the regulated community in excess of $50,000, so a regulatory analysis was not required." (Glatt, 2009a)

The statement that the proposed rule is not expected to have an impact on the regulated community in excess of $50,000 not only is unsubstantiated, but it is demonstrably false.

The Notice does not identify the "regulated community," but any rational interpretation would have to include the community affected by the adoption of the proposed administrative rule, i.e., the Upper Sheyenne River, Lake Ashtabula, the Lower Sheyenne River downstream from Lake Ashtabula to the Red River of the North, the Red River from Fargo to Winnipeg, and Lake Winnipeg.

The sole purpose of the adoption of the department's proposed administrative rule to raise the maximum level of sulfates in the Sheyenne River from 450 mg/L to 750 mg/L is to permit "increasing flow from the Devils Lake outlet" (Glatt, 2009a). Therefore, additional costs associated with increasing the flows from the Devils Lake outlet will be a direct result of the adoption of the proposed rule. These costs include increased operation, maintenance and replacement costs which, in themselves, will exceed $50,000 by at least an order of magnitude within a few years.

On August 19, 2009, the North Dakota State Water Commission approved a $16.5 million project to increase the pumping capacity of the Devils Lake outlet from 100 cfs to 250 cfs (MacPherson, 2009). The primary purpose of the proposed rule change is to make possible the expenditure of $16.5 million to increase the capacity of the outlet to discharge water into the Sheyenne River (Glatt, 2009c). Therefore, it would be ludicrous to suggest that the expenditure of $16.5 million to increase the discharge of water from the Devils Lake outlet to the Sheyenne River does not have an impact on the regulated community.

On August 10, 2009, the Valley City Times Record reported that:

"News from the North Dakota Health Department has caused the Valley City Commission to suspend the design phase of a Water Plant expansion and consider new options.

"'A couple of weeks ago we got a call from the State Department of Health about an emergency rule change,' said City Administrator Jon Cameron on Thursday at a meeting regarding the change.

"The Health Department's 6-month emergency rule allows an increase in the level of sulfate that can enter the Sheyenne River from Devils Lake, from 450 milligrams per liter to 750 milligrams per liter. After 6 months, time in which the Health Department is taking public comments on the change, the change may be made permanent." (Browne, 2009)

The costs for redesigning the expansion of the Valley City water treatment plant are a direct result of the Department's proposed emergency rule change and those costs alone will exceed $50,000.

The Associated Press reported on August 19, 2009, that:

"Officials in Valley City, downstream of Devils Lake, have worried about the increased sulfate levels in that city's water supply. The Water Commission on Tuesday also agreed to provide $9.2 million for that city's new water treatment facility, which can lower sulfate levels through reverse osmosis. The State Health Department already has committed more than $2 million for the $15.6 million project." (MacPherson, 2009)

The $9.2 million approved by the State Water Commission to pay for a reverse osmosis system for the Valley City water treatment plant to lower sulfate levels is a direct impact of the department's interim emergency rule and its proposal to adopt a new administrative rule permanently increasing the maximum allowable level of sulfate in the Sheyenne River from 450 mg/L to 750 mg/L.

The U.S. Army Corps of Engineers has determined that the operation of a 300 cfs Pelican Lake outlet constrained by a 300 mg/L sulfate limit in the Sheyenne River would result in significantly increase costs for eight affected downstream water treatment facilities. Hardness was identified as the major concern and ion exchange would be needed to treat sulfate levels of 300 mg/L (U.S. Army Corps of Engineers, 2003). According to the Corps' analysis:

"Modeling showed the total annualized cost for increased softening would range from $25,000 per year to $56,000 per year, depending on the modeled water quality future. The total annualized cost for capital improvements or alternate source water development required to bring the with-outlet product water to the water quality of without-project water ranged from $1,757,000 per year to $3,304,000 per year . . ." (FEIS p. 6–15)

The increased costs to downstream municipal water users resulting from the proposed emergency rule allowing increased discharges from the State Water Commission's West Bay Devils Lake outlet will be substantially greater than those identified by the Corps of Engineers for a 300 cfs Pelican Lake outlet constrained by a 300 mg/L sulfate limit in the Sheyenne River.

The U.S. Army Corps of Engineers has determined that the operation of a 300 cfs Pelican Lake outlet constrained by a 300 mg/L sulfate limit in the Sheyenne River would result in a $32,000 annual increase in costs to downstream industrial water users (U.S. Army Corps of Engineers, 2003). The increased costs to downstream industrial water users resulting from the proposed emergency rule allowing increased discharges from the State Water Commission's West Bay Devils Lake outlet will be substantially greater than those identified by the U.S. Army Corps of Engineers for a 300 cfs Pelican Lake outlet constrained by a 300 mg/L sulfate limit in the Sheyenne River.

The 300 mg/L sulfate constraint in the Sheyenne River would have limited the discharge from a 300 cfs Pelican Lake outlet to 0 to 100 cfs for 3 months of the 7-month operating season (U.S. Army Corps of Engineers, 2002). However, because sulfate levels in West Bay are about 700 mg/L, the State Water Commission's West Bay outlet will not be constrained by the 750 mg/L maximum sulfate limit in the Sheyenne River under the proposed emergency rule, so it will be able to operate at its planned full 250 cfs capacity and discharge much poorer quality water throughout the entire ice-free season. Consequently, it will have significantly more severe adverse impacts on downstream water quality and water treatment costs than those identified by the U.S. Army Corps of Engineers for its Pelican Lake outlet.

The U.S. Army Corps of Engineers' Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement determined that, with a Pelican Lake outlet operating under a 300 mg/L sulfate constraint in the Sheyenne River:

"The annual phosphorus load to Lake Ashtabula would increase by 40 metric tons (88,000 pounds) per year during the first 10 years of operation, which is variably a 60 to 100-percent increase over base conditions." (FEIS p., 5–83)

In its June 2003 "Response to Comments for the Devils Lake Outlet Project," the North Dakota Department of Health stated that the State Water Commission's 100 cfs West Bay Devils Lake outlet operating under a maximum a sulfate constraint of 300 mg/L in the Sheyenne River would export an average of 8,000 pounds of phosphorus and 40,000 pounds of nitrogen per year to the Sheyenne River, and:

". . . the annual phosphorus load will increase; however, its impact on the Sheyenne River and Lake Ashtabula will likely be minimal. Primary productivity is largely controlled by a limiting substance which, in this situation, is likely to be nitrogen." (North Dakota Department of Health, 2003)

The department's assumption that nitrogen will be the limiting substance for primary productivity in Lake Ashtabula erroneously fails to consider that, as the Devils Lake Biota Transfer Study pointed out:

"Cyanobacteria often comprise a large and important group of primary producers in aquatic ecosystems, but usually are viewed negatively because algae blooms are linked to eutrophication of water bodies, and cyanobacter account for more than 98 percent of algal blooms in some waters (citations omitted). Eutrophication results from the enrichment of water bodies with limiting nutrients, usually nitrogen and phosphorus. Cyanobacter blooms are often a response to nutrient loading, but some species are especially responsive to excess phosphorus. This is because, unlike the vast majority of organisms, many cyanobacter can exploit ('fix') atmospheric nitrogen as a nutrient. When phosphorus becomes over-abundant, most species increase growth and reproduction until the next most-limiting nutrient, usually nitrogen, becomes scarce. In such an environment, nitrogen-fixers have an advantage so they soon outcompete other species and dominate the community. Human activity tends to increase the availability of nitrogen and phosphorus in ecosystems, thus increasing the frequency of cyanobacterial blooms." (Peterson Environmental Consulting, Inc., 2002)

With the Devils Lake outlet operating at the planned capacity of 250 cfs and with no effective sulfate constraint in Sheyenne River (sulfate levels in West Bay are in the range of 700 mg/L), the amount of nitrogen and phosphorous exported to the Sheyenne River and Lake Ashtabula will be substantially greater than under the Corps' 300 cfs Pelican Lake outlet or the State Water Commission's West Bay outlet operating under a 300 mg/L sulfate constraint. This means that Lake Ashtabula, which already is euthophic, will become a nutrient sink with even more severe and extensive algal blooms than already occur, resulting in decreased recreational use of the reservoir and corresponding negative economic impacts in the area.

It is clear from just these few documented examples of the economic impacts of the emergency rule that the department's unsubstantiated claim that:

"The proposed rule is not expected to have an impact on the regulated community in excess of $50,000, so a regulatory review is not required." (Glatt, 2009a)

is patently preposterous.

ANTIDEGRADATION REVIEW IS REQUIRED FOR THE PROPOSED EMERGENCY RULE

North Dakota Administrative Code § 33–16–02.1–01, ¶ 2c, specifies that:

"Any public or private project or development which constitutes a source of pollution shall provide the best degree of treatment as designated by the department in the North Dakota pollutant discharge elimination system. If review of data and public input indicates any detrimental water quality changes, appropriate actions will be taken following procedures approved by the environmental protection agency. (North Dakota Antidegradation Implementation Procedure, Appendix IV.)"

It is important to note that this requirement of NDAC § 33–16–02.1–01 dealing with Standards of Quality for Waters of the State is independent, separate and distinct from the requirements of NDAC Chapter 33–16–01 dealing with the North Dakota Pollutant Discharge Elimination System, and it applies to any public or private project or development that results in detrimental water quality changes.

Appendix IV of the North Dakota Antidegradation Procedure states:

"Under this implementation procedure, all waters of the State are afforded one of three different levels of antidegradation protection. All existing uses, and the water quality necessary for those uses, shall be maintained and protected. Antidegradation requirements are necessary whenever a regulated activity is proposed that may have some effect on water quality. Regulated actions include permits issued under section 402 (NDPDES) and 404 (Dredge and Fill) of the Clean

Water Act, and any other activity requiring section 401 water quality certification . . ."

It is important to note that:

"Antidegradation requirements are necessary whenever a regulated activity is proposed that may have some effect on water quality."

Clearly, modifying water quality standards for the Sheyenne River to raise the maximum sulfate level from 450 mg/L to 750 mg/L constitutes "a regulated activity" that will have a significant effect on water quality.

It also is important to note that the next sentence:

"Regulated actions include permits issued under section 402 (NDPDES) and 404 (Dredge and Fill) of the Clean Water Act, and any other activity requiring section 401 certification."

is inclusive and not exclusive, i.e., regulated actions include permits issued under sections 402 and 404 of the Clean Water Act and certifications under section 401, but are not limited to those actions and do not exclude other regulated actions.

Section III of Appendix IV describes the Antidegradation Review Procedure and states, in part:

"The department will complete an antidegradation review for all proposed regulated activities. The findings of these reviews will be summarized using an antidegradation worksheet. A statement of basis for all conclusions will be attached to the completed worksheet. The level of detail of the review will depend upon the antidergradation protection applicable to the various classes of water."

Section III goes on to state:

"The level of antidegradation protection afforded each body of water in the State is consistent with beneficial uses of those water bodies. Appendix I and Appendix II of the Standards of Water Quality for the State of North Dakota identify rivers, streams, and lakes in the State with their classification. The classification shall be consistent with the following categories:

"*Category 1*—.Very high level of protection that automatically applies to Class I and Class IA streams and Class I, II, and III lakes, and wetlands that are functioning at their optimal level . . ."

The Procedures for Category 1 Waters specify that:

"Regulated activities that result in a new or expanded source of pollutants to this category of water are subject to the review process, unless the source would have no significant effect on the quality and beneficial uses of those waters, or if the effects will be appropriately minimized and temporary."

and:

"The applicant may be required to provide available data or other information about the affected water body and/or proposed activity to help determine the significance of the proposed degradation for specific parameters. The information includes recent ambient chemical, physical, or biological monitoring data sufficient to characterize, during the appropriate conditions, the spatial and temporal variability of existing background quality of the segment for the parameters that would be affected by the proposed activity. The information would also describe the water quality that would result if the proposed activity were authorized."

The Department of Health has already confirmed that discharges from the North Dakota State Water Commission's Devils Lake outlet meet the requirements for antidegradation review as is documented by its preparation of an Antidegradation Review Worksheet for the outlet on March 20, 2003 (Sauer, 2003). The Antidegradation Review Worksheet identifies the receiving water as the Sheyenne River and describes the proposed activity as:

"A temporary discharge of a maximum 100 cfs from West Bay of Devils Lake to the Sheyenne River. The discharge will be constrained to 300 mg/L sulfate at the point of insertion. The stated purpose is to reduce the potential for flooding." (Sauer, 2003)

In answer to the question, "Will the proposed activity result in significant degradation?," the reviewer indicates, "Yes." (Sauer, 2003)

Clearly, if discharges from the outlet limited to a maximum of 100 cfs and constrained to 300 mg/L of sulfate in the Sheyenne River would result in significant degradation, raising the sulfate limit in the Sheyenne River to 750 mg/L in order

to increase the discharge from the outlet to 250 cfs also would result in significant degradation.

THE DEPARTMENT MAY NOT PERMIT DEGRADATION OF WATER QUALITY IN THE SHEYENNE RIVER ABSENT AN AFFIRMATIVE DETERMINATION OF NECESSITY TO ACCOMMODATE IMPORTANT SOCIAL OR ECONOMIC DEVELOPMENT

North Dakota Administrative Code § 33–16–02.1–02 explicitly and unequivocally specifies that:

"The 'quality of the waters' shall be the quality of record existing at the time the first standards were established in 1967, or later records if these indicate an improved quality. Waters with existing quality that is higher than established standards will be maintained at the higher quality *unless affirmatively demonstrated*, after full satisfaction of the intergovernmental coordination and public participation provisions of the continuing planning process, *that a change in quality is necessary to accommodate important social or economic development in the area in which the waters are located . . .*" (Emphasis added).

The Sheyenne River is classified as a Class IA stream and the current water quality standard for Class IA streams establishes a maximum sulfate limit of 450 mg/L. The March 2006 report prepared for the North Dakota State Water Commission by Schuh and Hove on Sources and Processes Affecting Dissolved Sulfate Concentrations in the Upper Sheyenne River states:

"The percentage distribution of data in Fig. 13 includes additional Health Department data at Warwick. The distribution indicates that sulfate samples at Warwick never exceeded 300 mg/L before 2,000 and did so only about 25 percent of the time after 2000. Harvey samples, however, exceeded 300 mg/L about 40 percent of the time during the 1990s, and were below 300 mg/L only three times following the year 2000. This would indicate that concentrations at the Warwick gauge are fairly robust with respect to the 300 mg/L standard. In fact, during the wet period they were below 250 mg/L 80 percent of the time and below 220 mg/L half the time." (Emphasis added) (Schuh and Hove, 2006)

The data in Figure 13 of the report show the maximum sulfate level in the Sheyenne River downstream from the Devils Lake outlet at Warwick before 2000 at 230 mg/L and after 2000 at 307 mg/L (Schuh and Hove, 2006). Clearly, therefore, the quality of the water in the Sheyenne River in the segment affected by proposed emergency rule is higher than the established 450 mg/L maximum sulfate limit for Class IA streams. Consequently, the department must maintain the water quality in the Sheyenne River at the existing quality that is higher than the established standard unless it is affirmatively demonstrated that a change in quality is necessary to accommodate important social or economic development in the area in which the Sheyenne River is located.

Neither the State Water Commission nor the Department of Health has cited any evidence that the proposed emergency rule is necessary to accommodate important social or economic development in the area of the Sheyenne River, and, indeed, none exists. In fact, the evidence cited above overwhelmingly demonstrates that the proposed emergency rule will adversely affect social and economic development in the area.

The department's July 15, 2009, letter to Governor Hoven states that the July 7, 2009, letter from the city of Devils Lake (Bott, 2009) and the July 13, 2009, letter from the State Water Commission (Frink, 2009):

". . . describe the need for an emergency response to flood conditions . . . to address the situation by increasing flow from the Devils Lake outlet." (Glatt, 2009c)

The only information contained in the July 7, 2009 letter to the department from the president of the Devils Lake City Commission even remotely related to a need for adopting the proposed emergency rule in order to accommodate social or economic development are the statements that:

". . . we will remain concerned about the economic vitality of the area should the lake continue to rise and inundate additional farmland and homes." (Bott, 2009)

and:

". . . a natural overflow could result in future EXTREME water quality and flooding impacts downstream." (Bott, 2009)

Both statements are hypothetical and speculative and are not supported by data or information on probability of occurrence or the severity of impacts to social or economic development.

The July 13, 2009 letter to the department from the State Engineer contains even less information related to the need for adopting the proposed emergency rule in order to accommodate social or economic development. In fact, the only information contained in the State Engineer's letter that could be construed to relate to social or economic development are the unsubstantiated statements that:

"This (an overflow of Devils Lake to the Sheyenne River) would have major downstream consequences." (Frink, 2009)

and:

"The continual flooding of Devils Lake and Stump Lake constitutes an emergency condition, and the increasing outflows from the outlet is needed to assist in responding to the flooding. Operation of the outlet at its maximum capacity can provide an increase in water removed from Devils Lake reducing the risk of future flooding." (Frink, 2009)

The statements are unsubstantiated and speculative. No data are provided to demonstrate that the consequences of a natural overflow from Devils Lake would be any more "major" than those from the proposed emergency rule allowing the outlet to operate at 250 cfs with a 750 mg/L sulfate limit in the Sheyenne River. No information is provided to support the assertion that the flooding at Devils Lake constitutes an "emergency" or to indicate the severity of the alleged emergency. And, no data are provided to show exactly how much operation of the outlet under a maximum sulfate limit of 750 mg/L in the Sheyenne River and would reduce the risk of future flooding.

Neither the letter from the city of Devils Lake (Bott, 2009) nor the letter from the State Engineer (Frink, 2009) addresses the fact the city of Devils Lake has been unable to show that the flooding has had an adverse economic impact. As the Devils Lake Daily Journal reported in 2000, the city's economic director was quoted as saying:

"The challenge we have is statistically the (flooding) impact doesn't show up real well in areas of taxable sales and services. Our employment rate is very low, well below the national average. And the average wage continues to rise. It's a hard thing to show what impact the flooding's had." (Anonymous, 2000)

It is even more difficult to show that the proposed emergency rule to increase the maximum limit of sulfate in the Sheyenne River from 450 mg/L to 750/mg/L would result in any significant social or economic development. The Associated Press reported 3 weeks after the department vacated the North Dakota Pollutant Elimination System permit it had issued for the outlet that even an engineer from the North Dakota State Water Commission acknowledged that the outlet was "expected to remove only a few inches of water this year." In fact, operating at its current maximum capacity of 100 cfs from July to the end of November with the Department's North Dakota Pollutant Discharge Elimination System permit vacated and the maximum sulfate limit in the Sheyenne River raised to 750 mg/L, the outlet would remove about 30,000 acre-feet of water, which is equivalent to about a 2 inch reduction in the level of the lake at its current area of 163,000 acres. As pointed out above, operating at a maximum capacity of 250 cfs for a 7-month period from May through November, it would take 5.6 years for the outlet to remove just the inflows from this spring. And because the outlet removes water only after it already is in Devils Lake, it does little to reduce the impacts of flooding. Indeed, if the high inflows of this past spring were to continue in future years, the outlet would only slightly delay an overflow to the Sheyenne River but would not prevent it. For example, the Corps of Engineers determined that, under a stochastic analysis, a 300 cfs Pelican Lake outlet would reduce the chance of an overflow to the Sheyenne River from 9.4 percent to 4.6 percent (U.S. Army Corps of Engineers, 2003).

It should be noted in this context that the influx of Federal funds into the Devils Lake area to deal with the rising level of the lake, coupled with the outstanding fishery that has developed as the lake has risen, have been a significant economic boon to the region (U.S. Army Corps of Engineers, 2003). Now the U.S. Army Corps of Engineers reportedly is considering two options for raising the dike protecting the city of Devils Lake. The option of raising the dike another 5 feet is estimated to cost $73,000,000 and the option of raising the dike another 10 feet is estimated to cost $150,000,000 (Bonham, 2009) with 75 percent being paid by Federal funds (Nicholson, 2009). Ironically, therefore, to whatever extent the outlet operating under the proposed emergency rule might lower the level of Devils Lake, it could

potentially reduce the influx of Federal funds into the area by $54,750,000 to as much as $112,500,000, thereby resulting in significant adverse impacts on social and economic development.

In any event, it is clear that no substantive or credible evidence exists to support an affirmative determination that the emergency rule is necessary to accommodate important social or economic in the area.

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COMMENTS ON THE NORTH DAKOTA STATE WATER COMMISSION'S APPLICATION NO. 3457 TO DRAIN WATER FROM DEVILS LAKE TO THE SHEYENNE RIVER BY INCREASING THE CAPACITY OF THE EXISTING DEVILS LAKE OUTLET FROM 100 TO 250 CUBIC FEET PER SECOND

INTRODUCTION

On July 13, 2009, North Dakota State Engineer Dale Frink sent a letter to North Dakota Department of Health (NDDH, department), Environmental Health Section Chief L. David Glatt stating:

"The continual flooding of Devils Lake and Stump Lake constitutes an emergency condition, and the increasing of outflows from the outlet is needed to assist in responding to the flooding. Operation of the outlet at its maximum capacity can provide an increase in water removed from Devils Lake reducing the risk of future flooding." (Frink, 2009)

On July 15, 2009, NDDH Environmental Health Section Chief L. David Glatt sent a letter to North Dakota Governor John Hoeven requesting authority for the department "to implement interim emergency rules to reclassify stream water quality standards for a portion of the Sheyenne River" in order to "allow an immediate increase of discharge from the east end of Devils Lake in an effort to stabilize or decrease lake levels, thus reducing the impact of flooding." Mr. Glatt went on to explain that:

"As part of the authority provided under NDCC 28–32–03, we must declare that the proposed rule be an interim final rule. It must be filed with the Legislative Council to be valid and finalized within 6 months after the completion of an appropriate public participation process." (Glatt, 2009a)

The department's July 15, 2009, NOTICE OF INTENT TO ADOPT ADMINISTRATIVE RULE—issued the same day as Mr. Glatt's letter to the Governor—stated that:

"The purpose of the proposed rule is to change the maximum limit of sulfate in a segment of the Sheyenne River. The rule will change the maximum level of sulfate

in the segment of the Sheyenne River that runs from its headwaters to 0.1 mile downstream from the Baldhill Dam, including Lake Ashtabula, from 450 mg/L to 750 mg/L . . ." (Glatt, 2009b)

On August 19, 2009, the Associated Press reported that:

"The North Dakota Water Commission has approved a $16.5 million project aimed at controlling the level of swollen Devils Lake.

"Assistant Water Commission Engineer Todd Sando said the project involves installing additional pumps along the Devils Lake outlet that could remove more than 6 inches of water annually from the lake. The upgrade would boost the outlet's pumping capacity from 100 cubic feet per second to 250 cubic feet per second." (MacPherson, 2009)

Office of the State Engineer Water Development Division Application to Drain No. 3457 was signed by North Dakota Governor and State Water Commission Chairman John Hoeven and was received by the State Water Commission on October 26, 2009. The purpose of the project stated on the application is:

"Upgrade of existing drain to address continue [sic] lake rise."

The Project Description, Devils Lake Outlet Upgrade, Drain Permit Application No. 3457, accompanying the application states, regarding the Proposed Upgrade," that:

"In a July 7, 2009 letter, the Devils Lake City Commission requested that the NDDH and North Dakota State Water Commission (NDSWC) 'work together to identify means of removing additional water from Devils Lake to reduce flood damages.' Due to ongoing flooding and the potential for an uncontrolled overflow from the east end of the lake, the NDSWC responded by requesting the NDDH to implement emergency rules for the Sheyenne River to increase the amount of water discharged from the Devils Lake Outlet. The NDDH, on July 15, 2009, in accordance with North Dakota Century Code §28.32–02, implemented an emergency rule for a segment of the Sheyenne River. The NDDH amended the sulfate concentration level from 450 mg/L to 750 mg/L for the segment of the Sheyenne headwaters to a point just downstream of Baldhill Dam.

"The proposed upgrade involves increasing the capacity of the outlet from 100 cfs to 250 cfs. Two additional pumps are planned for the Round Lake pump station . . ."

This is the only information provided by the applicant State Water Commission regarding the impacts of increasing the discharge of the Devils Lake outlet from 100 cfs to 250 cfs and the maximum concentration of sulfate in the Sheyenne River from 450 mg/L to 750 mg/L.

The Associated Press reported on January 2, 2010 that:

"Part of the Sheyenne River that has been used to drain floodwaters from Devils Lake would have too much sulfate to be used for municipal drinking water under rules of the state Health Department is proposing . . .

"The proposed rule would allow sulfate levels in part of the Sheyenne River as high as 750 milligrams per liter of water. Until July, the limit was 450 milligrams per liter . . .

"Glatt said the changes were being proposed to allow the Devils Lake outlet to move greater amounts of water into the Sheyenne.

"The outlet diverts water from Devils Lake's west end into the river. Last summer, it could move only 100 cubic feet of water per second, and its use was limited by sulfate standards until the ceiling was raised to 750 milligrams per liter.

"North Dakota's Water Commission is planning $15 million worth of improvements, including larger pumps and water filtering equipment, to upgrade the outlet's pumping capacity to 250 cubic feet per second." (Wetzel, 2010)

It is clear, therefore, that the North Dakota Department of Health's proposed emergency rule to amend the Standards of Quality for Waters of the State to increase the maximum concentration of sulfate in the Sheyenne River from 450 mg/L to 750 mg/L is tied directly to the State Water Commission's application for a permit to increase the capacity of the Devils Lake outlet from 100 cfs to 250 cfs.

According to the NOTICE OF HEARING ON APPLICATION TO DRAIN WATER FROM DEVILS LAKE TO THE SHEYENNE RIVER issued on December 30, 2009, by the Ramsey County Water Resource District:

". . . the State Water Commission, 900 East Boulevard Avenue, Bismarck, ND 58505, has filed an application for a permit to drain water from Devils Lake to the Sheyenne River to address flooding impacts of the rising level of Devils Lake. The

project involves upgrading the capacity of the existing Devils Lake Outlet from 100 cfs to 250 cfs . . . The application has been determined by the State engineer to be of statewide or interdistrict significance"

Presumably, the application was submitted and is being considered under North Dakota Century Code § 61–32–03 and North Dakota Administrative Code Chapter 89–02–01. NDCC § 61–32–03 provides that:

"Any person, before draining a pond, slough, or lake, or sheetwater, or any series thereof, which has a watershed area comprising 80 acres (32.37 hectares) or more, shall first secure a permit to do so. The permit application must be submitted to the State engineer. The State engineer shall refer the application to the water resource districts within which is found a majority of the watershed or drainage area of the pond, slough, lake, or sheetwater for consideration and approval, but the State engineer may require that applications proposing drainage of statewide or interdistrict significance be returned to the State engineer for final approval. *A permit may not be granted until an investigation discloses that the quantity of water which will be drained from the pond, slough, lake, or sheetwater, or any series thereof, will not flood or adversely affect downstream lands.* If the investigation shows that the proposed drainage will flood or adversely affect lands of downstream landowners, *the water resource board may not issue a permit until flowage easements are obtained*. The flowage easements must be filed for record in the office of the recorder of the county or counties in which the lands are situated. *An owner of land proposing to drain shall undertake and agree to pay the expenses incurred in making the required investigation . . .*" (Emphasis added)

It is important to note that, in the case of the application cited in the above notice, NDCC § 61–32–03 imposes an affirmative fiduciary duty on the State Water Commission to "undertake and agree to pay the expenses incurred in making the required investigation" to determine whether the quantify of water which will be drained from Devils Lake as a result of increasing the capacity of the State Water Commission's Devils Lake outlet from 100 cubic feet per second (cfs) to 250 cfs will "flood or adversely affect downstream lands."

It also is important to note that it is not sufficient under NDCC § 61–32–03 for the issuance of the permit to be based upon an absence of evidence that increasing the capacity of the outlet from 100 cfs to 250 cfs will flood or adversely affect downstream lands, or upon a finding that the flooding or adverse effects on downstream lands are not significant or that they are necessary or justified in order to address flooding at Devils Lake. Nor are there any provisions under the statute for issuing a permit based upon speculative and unsubstantiated claims that flooding or other adverse effects can be avoided. NDCC § 61–32–03 explicitly requires that, before the permit may be granted, an investigation must have been conduced and the results of that investigation must affirmatively demonstrate that increasing the capacity of the State Water Commission's Devils Lake outlet from 100 cfs to 250 cfs "will not flood or adversely affect downstream lands."

Under NDAC § 89–02–01–09.2, Evaluation of applications—Factors considered:

"The State engineer, for applications of statewide or interdistrict significance, and the board for all applications to drain, shall consider the following factors:

—"The volume of water proposed to be drained and the impact of the flow or quantity of this water upon the watercourse into which the water will be drained.
—"Adverse effects that may occur to the lands of lower proprietors. This factor is limited to the project's hydraulic effects such as erosion, duration of floods, impact of sustained flows, and impact on the operation of downstream control devices.
—"The engineering design and other physical aspects of the drain.
—"The project's impact on flooding problems in the project watershed.
—"The project's impact on ponds, sloughs, streams or lakes having recognized fish and wildlife values.
—"The project's impact on agricultural lands.
—"Whether easements are required.
—"Other factors unique to the project."

ABSENCE OF INVESTIGATIONS AFFIRMATIVELY DEMONSTRATING THAT THE QUANTITY OF WATER DRAINED BY THE PROJECT WILL NOT FLOOD OR ADVERSELY AFFECT DOWNSTREAM LANDS

As noted above, NDCC § 61–32–03, Permit to drain waters required—Penalty, specifies that:

"A permit may not be granted until an investigation discloses that the quantity of water which will be drained from the pond, slough, lake, or sheetwater, or any series thereof, will not flood or adversely affect downstream lands."

The minutes of the December 8, 2009, meeting of the Devils Lake Outlet Monitoring Committee Modeling Subcommittee report that a simulation model is being developed by the U.S. Geological Survey to provide a "Stochastic Analysis of Devils Lake Outlet and Sheyenne River Sulfate Concentrations" and that plans are underway for linking the model with a deterministic model being developed by the U.S. Geological Survey and the North Dakota State Water Commission for "Monitoring and Modeling The Effects of Proposed Increase in Devils Lake Outlet Capacity on Future Flows and Sulfate Concentrations in Upper Sheyenne River and Lake Ashtabula" and for extending the model downstream of Lake Ashtabula.

The documented fact that the development of the stochastic simulation model for Devils Lake will not be completed until February 2010 and the deterministic Upper Sheyenne River and Lake Ashtabula model will not be completed until May 2010 constitutes unequivocal proof that the investigations required by NDCC 61–32–03 to demonstrate that "the quantity of water which will be drained from (Devils Lake by the expanded Devils Lake outlet) will not flood or adversely affect downstream lands" have not been done. Consequently, on this basis alone, the Ramsey County and Towner County Water Resource Boards are prohibited by statute from approving the State Water Commission's application for a permit to upgrade the capacity of the existing Devils Lake outlet from 100 cfs to 250 cfs.

THE VOLUME OF WATER PROPOSED TO BE DRAINED AND THE IMPACT ON THE SHEYENNE RIVER

The first factor that the Ramsey County and Towner County Water Resource Boards are required to consider under NDAC § 89–02–01–09.2 in evaluating the State Water Commission's application for a permit to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs is:

"The volume of water proposed to be drained and the impact of the flow or quantity of this water upon the watercourse into which the water will be drained."

Assistant North Dakota State Engineer Todd Sando claims that operation of the Devils Lake outlet at a capacity of 250 cfs "could remove more than 6 inches of water annually from the lake" (MacPherson, 2009).

Application to Drain No. 3457 submitted by the State Water Commission lists the water area of Devils Lake at 163,000 acres. In order remove 6 inches of water from Devils Lake at an area of 163,000 acres, it would be necessary remove of 81,500 acre-feet of water. Operating at 250 cfs, the Devils Lake outlet would remove 14,875 acre-feet per month, so it would take 5.5 months for the outlet to remove 81,500 acre-feet of water from the lake.

Flows in the Sheyenne River flows averaged 36,000 acre-feet per year at Warwick from 1949–1971 (U.S. Bureau of Reclamation, 1974) and 87,380 acre-feet per year below Baldhill Dam from 1950–1992 (U.S. Bureau of Reclamation, 1997). Increasing the annual flows of the Sheyenne River by 81,500 acre-feet as a result of operation of the Devils Lake outlet would increase the average annual flow at Warwick by 226 percent, and it would increase the average annual flow at Baldhill Dam by 93 percent.

The capacity of Lake Ashtabula at the top of the conservation pool is approximately 69,000 acre-feet (U.S. Bureau of Reclamation, 1999). Therefore, operation of the Devils Lake outlet at 250 cfs would replace the target volume of Lake Ashtabula with lower quality Devils Lake water every 4.6 months, or 1.2 times every 5.5 months.

The applicant State Water Commission has cited no investigations of the impacts of an additional 81,500 acre-feet water from the Devils Lake outlet on the Sheyenne River and Lake Ashtabula.

ADVERSE EFFECTS THAT MAY OCCUR TO THE LANDS OF LOWER PROPRIETORS

The second factor that the Ramsey County and Towner County Water Resource Boards are required to consider under NDAC 89–02–01–09.2 in evaluating the State Water Commission's application for a permit to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs is:

"Adverse effects that may occur to the lands of lower proprietors. This factor is limited to the project's hydrologic effects such as erosion, duration of floods, impact of sustained flows, and impact on the operation of downstream water control devices."

The applicant State Water Commission has cited no investigations demonstrating that adverse effects will not occur to the lands of lower proprietors as a result of increasing the capacity of the Devils Lake outlet from 100 cfs to 250 cfs. However, other investigations indicate that the adverse effects to the lands of lower proprietors resulting from increasing the capacity of the outlet to 250 cfs will be severe.

The North Dakota Department of Health stated in its 2003 "Statement of Basis, Devils Lake Outlet ND–0026247" for issuance of a North Dakota Pollution Discharge Elimination System Permit for the State Water Commission's Devils Lake outlet that the U.S. Army Corps of Engineers' April 2003 Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement:

". . . includes background information on hydrology, natural resources and other evaluations that are relevant to the consideration of this discharge permit." (North Dakota Department of Health, 2003)

The Corps of Engineers' April 2003 Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement (FEIS) (U.S. Army Corps of Engineers, 2003) did not evaluate the impacts of a 250 cfs West Bay outlet constrained only by a 750 mg/L sulfate limit in the Sheyenne River, but it did evaluate the impacts of a 300 cfs Pelican Lake outlet constrained by a 300 mg/L sulfate limit and 600 cfs total flows in the Sheyenne River. However, the water quantity impacts of the State Water Commission's West Bay outlet operating at 250 cfs with a 750 mg/L sulfate limit in the Sheyenne River would be significantly greater than those of a 300 cfs Pelican Lake outlet because operation of the Pelican Lake outlet would be limited to discharges of 0 to 100 cfs for 3 months of its 7 month operating season (U.S. Army Corps of Engineers, 2002). Nevertheless, it is instructive to consider the hydrologic effects identified by the Corps for a 300 cfs Pelican Lake outlet, recognizing that the effects of the State Water Commission's West Bay outlet operated at 250 cfs would be even more severe:

—"An outlet to the Sheyenne River . . . could also reduce the aesthetics of the riparian zone by *accelerating erosion-deposition processes along the river* . . . (Emphasis added) (FEIS p. 6–47)

—". . . an outlet could *exacerbate flooding along the Sheyenne River* with consequent damage to transportation infrastructure, including roads and bridges. (Emphasis added) (FEIS p. 6.49)

—"*Exacerbated flooding in the Sheyenne River* could damage agricultural property, including lands, equipment and structures. (Emphasis added) (FEIS p. 6–49)

—"An outlet from Devils Lake could diminish property values along the Sheyenne River. The potential adverse impact to property values would be based on damage in the riparian zone, *exacerbated flood risks,* and reduced water quality for agriculture or recreation. (Emphasis added) (FEIS p. 6–50)

—"*Extended high flows* from Baldhill Dam may result in problems related to the ability to drain the fish ponds at Baldhill Dam and Valley City National Fish Hatcheries. Flows around 700 to 800 cfs will prevent the ponds from being drained. (Emphasis added) (FEIS p. 6–52)

—"Operation of the Pelican Lake outlet would result in *substantial change in the flow regime of the Sheyenne River.* Discharges of up to 300 cfs over a major portion of the summer would result in *a five- to tenfold increase in summer/fall flows* along the Sheyenne River. Increased flows throughout the summer would result in *changes in river in river stage on the Sheyenne and Red Rivers*. (Emphasis added) (FEIS p. 6–56)

—"With the increase in flow, some *change is expected in width and depth, and erosion would probably increase.* (Emphasis added) (FEIS p. 6–59)

—"*Effects in Lake Ashtabula include reduced retention time,* increased nutrient loading, increased movement of fish out of the lake, and *increased storage of water. The outlet would reduce storage time in Lake Ashtabula and increase turnover rate.* (Emphasis added) (FEIS p. 6–60)

—"*The operation of the outlet would affect river stages,* groundwater levels near the river, *erosion*, availability of aquatic habitat, river access, and river crossings. (FEIS p. 6–60)

—In summary, *changes in hydrology would be significant with a Pelican Lake alternative because large amounts of water could be discharged during wet periods in the Devils Lake basin due to improved water quality.*[1] *Erosion will be greater* . . ." (Emphasis added) (FEIS p. 6–60)

[1] Even larger quantities of water could be discharged by the Devils Lake outlet during both wet and dry periods because the 250 cfs discharge of water from West Bay with 600 mg/L to

It is important to note that the analysis of the hydrologic impacts of the Corps of Engineers' 300 cfs Pelican Lake was based on the assumption that:

"The channel capacity (of the Sheyenne River) is estimated at about 600 cfs upstream of Lake Ashtabula." (FEIS p. 5–10)

The State Water Commission's Project Description, Devils Lake Outlet Upgrade, Drain Permit Application No. 3457 also cites "the 600 cfs channel capacity of the Sheyenne River," so it is clear that any information from the State Water Commission regarding the hydrologic impacts of the outlet would be based on the assumption that the channel capacity of the Sheyenne River is 600 cfs.

However, the channel capacity of the Sheyenne River at Warwick, 30 miles downstream from the insertion point of the Devils Lake outlet, is only 300 cfs (U.S. Bureau of Reclamation, 2003) and the channel capacity upstream from Warwick is even less. Consequently, because the channel capacity of the Upper Sheyenne River downstream from the insertion point of the outlet is half or less than that assumed by the Corps, the hydrologic impacts of the Corps' 300 cfs Pelican Lake outlet would be far greater than indicated in the FEIS, and the impacts of increasing the capacity of the State Water Commission's Devils Lake outlet to 250 cfs would be significantly more severe than those for a 300 cfs Pelican Lake outlet.

Because the applicant has cited no investigations quantifying and qualifying the hydrologic effects such as erosion and flooding to the lands of lower proprietors resulting from increasing the capacity of the Devils Lake outlet to 250 cfs, and because the preponderance of the evidence unequivocally demonstrates that increasing the capacity of the State Water Commission's Devils Lake outlet to 250 cfs will flood and adversely affect downstream lands, the Ramsey County and Towner County Water Resource Boards may not issue the permit until the required investigations have been conducted and flowage easements have been obtained from all of the affected downstream landowners.

FAULTY ENGINEERING DESIGN

The third factor that the Ramsey County and Towner County Water Resource Boards are required to consider under NDAC § 89–02–01–09.2 in evaluating the State Water Commission's application for a permit to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs is:

"The engineering design and other physical aspects of the drain."

The North Dakota State Water Commission's 2001 Devils Lake (Peterson Coulee) Outlet Request for Proposal stated explicitly that:

". . . The State's primary goal is to have an outlet operating *as quickly and at as low a cost as possible*. Also, it is quite possible that the current wet cycle may end within the next 10 to 15 years at which point the outlet may no longer be operated. Therefore, the cost and efficiency of the pumps and short delivery time are more important than the reliability and long life span of the pumps . . ." (Emphasis added)

Because the State Water Commission's goal was to build an outlet at as low a cost as possible while compromising reliability, numerous problems have developed with operation of the outlet. For example, in a September 17, 2009, letter to the State Water Commission, the Benson County Water Resource Board outlined some of the problems resulting from the substandard engineering design and faulty construction of the outlet:

"Primarily what we speak of is what we have seen on how the water is leaching outside of the canal project and remaining on the adjacent farmland. Culverts have been installed to divert water, either directly into the pipeline project or under the pipeline project. However, the culverts remain plugged and water impounds on the farmers' fields. In addition, we believe that the canal project itself is allowing waters to leach out and salinize adjacent farmland. As a water resource board, we would ask that you take care of the existing problems which this project has either created, uncontrollably caused, or compounded prior to increasing the outflow of water down this unique project." (L. Olson, 2009)

The applicant State Water Commission has cited no investigations of the design and construction deficiencies of the current Devils Lake outlet or how the problems

700 mg/L of sulfate would not be constrained under the proposed 750 mg/L sulfate limit in the Sheyenne River.

caused by those deficiencies will be exacerbated when the capacity of the outlet is increased from 100 cfs to 250 cfs.

THE PROJECT'S IMPACT ON FLOODING PROBLEMS IN THE PROJECT WATERSHED

The fourth factor that Ramsey County and Towner County Water Resource Boards are required to consider under NDAC § 89–02–01–09.2 in evaluating the State Water Commission's application for a permit to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs is:

"The project's impact on flooding problems in the project watershed."

The applicant State Water Commission has neither submitted nor cited substantive information regarding the impact of increasing the capacity of the Devils Lake outlet from 100 cfs to 250 cfs on flooding problems in the project watershed, i.e., the 3,814 square mile Devils Lake Basin. The Application to Drain No. 3457 submitted by Governor and State Water Commission Chairman John Hoeven states, under Purpose, only:

"Upgrade of existing drain to address continue [sic] lake rise."

and the only information regarding the impact on flooding problems in the project watershed contained in the State Water Commission's Project Description, Devils Lake Upgrade, Drain Permit Application No. 3457 submitted with its application for the permit is the statement that:

"In a July 7, 2009, letter, the Devils Lake City Commission requested that the NDDH and North Dakota State Water Commission (NDSWC) 'work together to identify means of removing additional water from Devils Lake to reduced flood damages.'"

The July 7, 2009, letter from the Devils Lake City Commission provided no information on the impact of the project on flooding in the project watershed. (Bott, 2009)

The July 13, 2009, letter from State Engineer Dale Frink to the North Dakota Department of Health did not mention increasing the capacity of the Devils Lake outlet to 250 cfs and stated only that:

"Operation of the outlet at its maximum capacity can provide an increase in water removed from Devils Lake reducing the risk of future flooding." (Frink, 2009)

The letter provides no information on how much water could be removed from Devils Lake by operating the outlet at its maximum capacity, which at the time was 100 cfs, or how much it would reduce the risk of future flooding.

The only information regarding flooding in the watershed contained in NDDH Environmental Health Section Chief L. David Glatt's July 15, 2009, letter to Governor Hoeven was the statement that:

"In an effort to address the widespread flood impacts in the Devils Lake region, the department finds that emergency rulemaking is necessary and is requesting the authority to implement interim emergency rules to reclassify stream water quality standards for a portion of the Sheyenne River. This action would allow an immediate increase of discharge from the west end of Devils Lake in an effort to stabilize or decrease levels, thus reducing the impact of flooding." (Glatt, 2009a)

The letter does not mention increasing the capacity of the Devils Lake outlet from 100 cfs to 250 cfs nor does it provider any information regarding the actual effects of the proposed emergency rulemaking to reclassify stream water quality standards for a portion of the Sheyenne River in stabilizing or decreasing the levels of the lake or reducing the impact of flooding.

The Finding and Statement of Reason of the North Dakota Department of Health Regarding Proposed Rule Relating to Water Quality Standards signed by NDDH Environmental Health Section Chief L. David Glatt on July 15, 2009, states only that emergency rulemaking "was necessary because imminent peril threatened public health or safety, or welfare, which could be abated by emergency effectiveness," but it does not mention increasing the capacity of the Devils Lake outlet to 250 cfs, nor does it provide any information regarding the impact of the proposed emergency rule on flooding in the Devils Lake Basin, on the alleged imminent peril or on public health, safety or welfare (Glatt, 2009c).

Indeed, the only information on the impact of increasing the capacity of the Devils Lake outlet from 100 cfs to 250 cfs on flooding in the Devils Lake Basin appears to the unsubstantiated statement by Assistant State Engineer Todd Sando that it:

". . . could remove more than 6 inches of water annually from the lake." (MacPherson, 2009)

It is instructive to recall in this context that State Water Commission Water Resource Engineer Julie Prescott stated in her June 26, 2003, memorandum on Application to Drain No. 2986—Devils Lake Outlet for a permit to construct the original outlet that:

"It has been estimated that a 100 cfs discharge could lower the current water surface of Devils Lake between 2 and 4 inches per year."

State Water Commission Devils Lake Outlet Project Engineer Bruce Engelhardt also was quoted on July 21, 2005, as stating that:

"If we could run at 100 cfs it would take 7 months to take 4 inches off the lake." (Johnson, 2005)

However, instead of lowering the lake between 8 to 16 inches (2–4 inches per year) in the 4 years of operation from 2005 through 2008, the Devils Lake outlet removed the equivalent of just over one-tenth of an inch of water from the lake, and in 2009 the lake was 10 inches higher than it was before the outlet began operation.

In fact, on September 24, 2002, Devils Lake Project Engineer Bruce Englehardt had submitted a request to the U.S. Army Corps of Engineers for the "actual numbers" used by the Corps in generating Devils Lake elevations with operation of the State Water Commission's Devils Lake outlet under three different (Moderate 1,450, Moderate 1,455 and Wet) lake level scenarios (Engelhardt, 2002). The next day, September 25, 2002—15 months before SWC Water Resource Engineer Julie Prescott prepared her June 26, 2003, memorandum on the SWC's Application to Drain No. 2986 and 25 months before Mr. Englehardt told The Grand Forks Herald that the outlet would take 4 inches off the lake per year—Mr. Daniel Reinarts of the U.S. Army Corps of Engineers sent Mr. Engelhardt an e-mail stating, "Attached are the lake level plots that you requested" (Reinartz, 2002). The lake level plots provided to Mr. Engelhardt by the U.S. Army Corps of Engineers on September 25, 2002, show that after 10 years of operation under a Moderate 1,450 feet lake level scenario, the State Water Commission's Devils Lake outlet would lower the level of the lake by 2.4 inches, under a Moderate 1,455 feet lake level scenario, the outlet would lower the lake by 3.6 inches, and under a Wet scenario, the outlet would lower the level of the lake by 6 inches. Of course, we now know that even the Corps of Engineers' projections grossly over-estimated the efficacy of the outlet.

On August 27, 2007, The Grand Forks Herald reported the evidence confirming that North Dakota State Engineer Dale Frink and his staff knew before their Application to Drain No. 2986—Devils Lake Outlet was submitted to the Ramsey County and Towner County Water Resource Districts on April 11, 2003, that the State Water Commission's Devils Lake outlet would not remove 4 inches of water per year from the lake and that it would not have a significant impact on the level of the lake (Lee, 2007a, 2007b).

Consequently, because of the marked disparity between the hypothetical and the actual operation of the outlet, and, indeed, between what the State Engineer and his staff knew about the lack of efficacy of the outlet and what they stated on their Application to Drain No. 2986—Devils Lake Outlet and what they told the public, it is appropriate to examine the Assistant State Engineer's current claim that increasing the capacity of the outlet to 250 cfs "could remove more than 6 inches of water annually from the lake."

If the outlet were to operate at 250 cfs continuously for 5.5 months, it would remove 81,500 acre-feet of water from Devils Lake, which would be equivalent to 6 inches at a lake area of 163,000 acres. However, removing the equivalent of 6 inches of water from the lake is not the same as lowering the level of the lake by 6 inches. For example, inflows to Devils Lake averaged 317,000 acre-feet per year from 1993 to 2000 (U.S. Army Corps of Engineers, 2002) and were 418,000 acre-feet in 1997. In the spring of 2009 the inflows were a record 587,000 acre-feet (Frink, 2009). At 81,500 acre-feet per year, it would take 7.2 years for the outlet operating at 250 cfs to remove just last spring's inflows. In the meantime, additional inflows would be occurring every year, so after 7 years of operation of the outlet at 250 cfs the lake still would not necessarily be any lower, just as the lake was 10 inches higher in 2009 than it was before the outlet began operating in 2005. On the other hand evaporation in the Devils Lake area averages 30 inches per year, which is equivalent to the removal of 407,000 acre-feet of water per year at a lake area of 163,000 acres—five times the volume that would be removed by the outlet operating at 250 cfs, and at no cost.

It is important to recognize, however, that, just as with the previous claims about the outlet operating at 100 cfs being able to remove 4 inches of water annually from the lake, it is highly unlikely that the outlet would be able to operate continuously at 250 cfs for 8 months from April through November or even for 5.5 months as Assistant State Engineer Todd Sando implies without violating the 450 mg/l sulfate limit on the Lower Sheyenne River.

The North Dakota Department of Health's proposed emergency rule would:

". . . change the maximum level of sulfate in the segment of the Sheyenne River that runs from its headwaters to 0.1 mile downstream from the Baldhill Dam from 450 mg/L to 750 mg/L." (Glatt, 2009b)

Sulfate levels in West Bay of Devils Lake range between 600 mg/L and 700 mg/L. Operation of the outlet at 250 cfs would replace the 69,000 acre-feet volume at the top of Lake Ashtabula's conservation pool with 600–700 mg/L sulfate Devils Lake water in just 4.2 months, at which time operation of the outlet would have to be suspended because releases of water with 600–700 mg/L of sulfate could not be made from Lake Ashtabula without violating the 450 mg/L sulfate limit in the Lower Sheyenne River beginning 0.1 mile downstream from Baldhill Dam. Consequently, once sulfate levels in Lake Ashtabula reached 450 mg/L, subsequent discharges from the outlet would be limited by dilution of sulfate levels in Lake Ashtabula by natural flows in the Sheyenne River, as well as by management of the reservoir for flood control, downstream municipal water supply and recreation.

With discharges from the outlet running at 600–700 mg/L of sulfate and natural flows in the Sheyenne River at Warwick exceeding 300 mg/L of sulfate 25 percent of the time since 2000 (Schuh and Hove, 2006), it is apparent that Lake Ashtabula would reach 450 mg/L of sulfate long before 69,000 acre-feet of Devils Lake water were discharged from the outlet.

Of course, flows and sulfate concentrations in the Sheyenne River, inflows to Lake Ashtabula and evaporation and releases from the reservoir occur in a dynamic state, so it is very difficult to balance all of the constantly changing variables in a simple calculation to show the impact of operating the outlet at 250 cfs on the level of Devils Lake. Nevertheless, it appears unlikely that the outlet would be able to remove the equivalent of more than an inch or two of water from Devils Lake in most years even with its capacity increased to 250 cfs.

It is precisely because of the complexity of balancing natural flows in the Sheyenne River with discharges from the outlet and releases from Lake Ashtabula to maintain acceptable levels of sulfate in the Sheyenne River downstream from Baldhill Dam that the computer simulation models discussed at the December 8, 2009, Devils Lake Outlet Monitoring Committee Modeling Subcommittee meeting need to be developed before the amount of water that the outlet actually would be able to remove from Devils Lake can be determined.

What is abundantly clear, however, is that the investigations required to evaluate objectively the impact of the proposed increase in the capacity of the Devils Lake outlet to 250 cfs on flooding in the Devils Lake Basin have not yet been done. Consequently, no objective evidence is available to demonstrate that increasing the capacity of the Devils Lake outlet to 250 cfs will have a significant impact on the level of Devils Lake, that it will stabilize the lake, that it will decrease lake levels, or that it will reduce the impact of flooding.

For the State Water Commission to submit an application for a permit to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs without having factual information available on the efficacy of the project is irresponsible. To do so after making deliberately misleading statements regarding the efficacy of its original 100 cfs outlet is inexcusable.

THE PROJECT'S IMPACT ON STREAMS OR LAKES HAVING RECOGNIZED FISH AND WILDLIFE VALUES

The fifth factor that the Ramsey County and Towner County Water Resource Boards are required to consider under NDAC § 89–02–01–09.2 in evaluating the State Water Commission's application for a permit to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs is:

"The project's impact on ponds, sloughs, streams, or lakes having recognized fish and wildlife values."

The U.S. Army Corps of Engineers' Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement describes the fish and wildlife values of the Sheyenne River as follows:

"The Sheyenne River provides spawning habitat and nursery areas for forage fish, as well as a migrational avenue for sport fish, including channel catfish, northern pike, walleye, bass, and crappie especially during high water conditions. The Sheyenne River contains more species of fish than any other North Dakota tributary, with over 50 identified. The river itself and a number of small reservoirs created by low-head dams provide fishing opportunities for nearby residents. About 3 percent of the angler-days of fishing in North Dakota are spent on the Sheyenne River. Commonly harvested fish include northern pike, walleye, channel catfish, black bullhead, yellow perch, and bluegill. Baldhill Creek, a tributary to the Sheyenne River, contains the only known population of trout perch in North Dakota. There are nine species of freshwater mussels inhabitating the Sheyenne River.

"The riparian areas along the Sheyenne River provide valuable habitat for a variety of wildlife species. Game species found along the river's riparian corridor and adjacent uplands include white-tailed deer, moose, wood duck, dabbling duck, pheasant, greater prairie chicken, turkey, squirrels and rabbits. Furbearing species and migratory non-game birds use the river corridor for breeding, feeding and migration.

"In summary, the Sheyenne River provides significant and unique aquatic and terrestrial resources. It is one of the most heavily wooded areas of the State and contains one of the largest and most diverse fisheries." (U.S. Army Corps of Engineers, 2003).

The Corps of Engineers' FEIS did not evaluate the impacts on fish and wildlife of a 250 cfs West Bay outlet constrained only by a 750 mg/L sulfate limit in the Sheyenne River, but it did evaluate the impacts of a 300 cfs Pelican Lake outlet constrained by a 300 mg/L sulfate limit and 600 cfs total flows in the Sheyenne River. As discussed above, the water quality and water quantity impacts of a 250 cfs West Bay outlet constrained only by a 750 mg/L sulfate limit in the Sheyenne River would potentially be significantly more severe than those of a 300 cfs Pelican Lake outlet constrained by a 300 mg/L sulfate limit and 600 cfs total flows in the Sheyenne River. The Corps identified the following impacts on fish and wildlife resources in the Sheyenne River resulting from the operation of a 300 cfs Pelican Lake outlet:

—"Operation of the Pelican Lake outlet would result in substantial change in the flow regime of the Sheyenne River. Discharges up to 300 cfs over a major portion of the summer would result in a five to tenfold increase in summer/fall flows along the Sheyenne River. Increased flows throughout the summer would result in changes in river stage on the Sheyenne and Red Rivers. (FEIS p. 6–56)

—". . . the outlet could result in up and down flows with sudden and extreme fluctuations in flow for much of the 50-year period of operation. These are the types of situations that make it difficult for species to adapt to habitat conditions. (FEIS p. 6–56)

—"Operation of a Pelican Lake outlet would affect both the water quality aspects and the physical characteristics of aquatic habitat on the Sheyenne River. While water quality constituents would not exceed tolerance levels for aquatic fauna in the Sheyenne River, many constituent levels would be dramatically increased over baseline conditions. Water quality modeling indicates that the level of these constituents would increase as much as 100 percent during pumping. (FEIS p. 6–57)

—"Changes in habitat composition and availability would result in changes in species composition and abundance. There may be some lost year classes of fish and declines in invertebrate populations. (FEIS p.6–59)

—"The changes on the Sheyenne River in water quality, hydrology, geomorphology, and habitat could result in substantial changes in or stress to aquatic biota . . . The outlet operation would also cause loss of spawning and nursery habitat, increased erosion, and changes in channel morphology. Increases in channel width may result in less available habitat once outlet operation ceases. (FEIS p. 6–59)

—"The loss of habitat due to increased flows, changes in channel geometry, loss of overbank cover and sedimentation, coupled with changes in water quality and algal growth, would all contribute to substantial changes in the aquatic community present in the Sheyenne River. Projected water quality and quantity changes associated with outlet operation may adversely influence fish reproduction and result in lost-year classes. The threshold chloride levels for some aquatic species, such as mussels, would be approached with operation of an outlet; however, no direct effects due to increased chloride levels are anticipated. The cumulative result of all of these changes would be a decrease in diversity of aquatic species in the Sheyenne River. (FEIS p. 6.59)

—"With the increase in flow, some change is expected in width and depth, and erosion would probably increase. Expected habitat changes include a decline of shallow pool, shallow riffle, and medium pool habitats, and an increase in fast riffle, raceway, and deep pool habitats in spring, summer and fall. Increases in summer and fall discharges reduce the slower flowing fish nursery habitat (slow riffle, shallow and medium pool guilds.) (FEIS p. 6–59)

—"Monthly discharge would be highly altered during summer and fall, and then decline dramatically in winter . . . Fish would be affected by the change to deep/fast less usable habitat in all seasons, and the loss of summer and fall habitat for shallow, medium and deep pool guilds. Unionids and other invertebrates would be affected by the decrease in moderately flowing habitat. The increase in raceway and fast riffle habitat may benefit the tricopteran guild, but overall invertebrate diversity (low gradient guild) would be negatively affected. Macrophytes, although not common in this reach of the river, probably would be scoured by high flows. Unionids would most likely be affected by the dramatic decline between fall and winter flows. Many unioids would not survive these changes during outlet operation. (FEIS p. 6–60)

—"Effects in Lake Ashtabula include reduced retention time, increased nutrient loading, increased movement of fish out of the lake, increased salinity, and increased storage of water. The outlet would reduce the storage time in Lake Ashtabula and increase turnover rate. This could affect walleye production and increased movement of some fish out of Lake Ashtabula and into downstream habitats . . . (FEIS p. 6–60)

—"The operation of the outlet would affect river stages, groundwater levels near the river, erosion, availability of aquatic habitat, river access, and river crossings. (FEIS p. 6–60)

—"In summary, changes in hydrology would be significant with a Pelican Lake alternative because large amounts of water could be discharged during wet periods in the Devils Lake basin due to improved water quality.[2] Erosion will be greater, summer nursery habitat will be less, unproductive habitat will increase in summer and fall, and change in flow magnitude between fall and winter will be greater. Therefore aquatic communities may survive the water quality changes of the alternative, only to be affected by the change in habitat and hydrology. The changes in the aquatic community would persist for many years after outlet operation has ceased. (FEIS pp. 6–61, 6–62)

—"After outlet operation ceases, slower flowing, shallow habitats would return and the upper reach would return to less hydrologically stable condition. In addition, after a number of years of outlet operation the channel would have changed, becoming wider and deeper, such that the reduced water levels would result in less available wetted habitat (and higher temperatures) during low flow conditions. The increased flow associated with the operation of the outlet would also alter habitat distribution and probably result in some erosion and deposition. These changes would affect habitat conditions and availability when the outlet ceases operation. Only a few small permanent tributaries drain into the upper Sheyenne River, and their suitability as unionid refugia is not known. Fish hosts are prevented from carrying glochidia upstream past Baldhill Dam. Unless unionid refugia occur in the small tributaries, fauna is unlikely to recolonize to pre-project conditions. Fish species that benefited from increased spawning and nursery habitat associated with higher flow would be negatively affected by the lack of those habitats with lower flows. Invertebrate fauna may recover over time. However, species composition would probably differ from prepumping conditions. (FEIS p. 6–62)

—"Vegetation in the riparian corridor may be affected by changes in groundwater elevation and quality, changes in frequency and duration of flooding and induced erosion associated with increased flows. Based on the assumption of a one-quarter mile area of influence, groundwater changes could potentially affect about 112,000 acres of riparian lands along the Sheyenne River . . . In rare instances, there could be overbank flooding due to unforeseen rainstorms and the inability to turn the outlet off in time. (FEIS p. 6–63)

—". . . it is likely that a large portion of the riparian vegetation would shift form woods to a more open community type, resulting in a concurrent change in animal species composition along the river. Changes in water quality to a more saline condition could also influence the amount and type of vegetation along the

[2] Or, in the case of the State Water Commission's West Bay outlet, as a result of lowering the water quality standard by raising the sulfate limit in the Sheyenne River from the 300 mg/L constraint for the Corps' Pelican Lake outlet to 750 mg/L under the North Dakota Department of Health's proposed emergency rule.

river. Some of the larger overstory forest trees may survive a year or longer, but with reduced vigor. Once the outlet operation is completed, recovery of these areas through succession would occur, which could take decades in some areas." (FEIS p. 6–65)

The U.S. Army Corps of Engineers' Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement determined that, with a 300 cfs Pelican Lake outlet operating under a 300 mg/L sulfate constraint and total flows of 600 cfs in the Sheyenne River:

"The annual phosphorus load to Lake Ashtabula would increase by 40 metric tons (88,000 pounds) per year during the first 10 years of operation, which is variably a 60 to 100 percent increase over base conditions." (FEIS, p. 5–83)

The State Water Commission has provided no information on phosphorous loading of the Sheyenne River and Lake Ashtabula from its Devils Lake outlet discharging 250 cfs of West Bay water containing 600 mg/L to 700 mg/L of sulfate and constrained only by a 750 mg/L sulfate limit on the Sheyenne River. However, it appears reasonable to assume that the phosphorous loading would be at least as great as, and probably greater than, from a 300 cfs Pelican Lake outlet constrained by a 300 mg/L sulfate limit and 600 cfs total flows in the Sheyenne River.

In its June 2003 Response to Comments for the Devils Lake Outlet Project, the North Dakota Department of Health dismissed the contribution of a 100 cfs Devils Lake outlet constrained by a 300 mg/L limit and 600 cfs total flows in the Sheyenne River to eutrophication and algal blooms in Lake Ashtabula with the statement that:

". . . the annual phosphorous load will increase; however, its impact on the Sheyenne River and Lake Ashtabula will likely be minimal. Primary productivity is largely controlled by a limiting substance which, in this situation, is likely to be nitrogen." (North Dakota Department of Health, 2003)

The Department's assumption that nitrogen will be the limiting substance for primary productivity in Lake Ashtabula erroneously fails to recognize that, as the Devils Lake Biota Transfer Study pointed out:

"Cyanobacteria often comprise a large and important group of *primary producers* in aquatic ecosystems, but usually are viewed negatively because algal blooms are linked to eutrophication of water bodies, and cyanobacter account for more *than 98 percent of algal blooms* in some waters (citations omitted). Eutrophication results from the enrichment of water bodies with limiting nutrients, usually nitrogen and phosphorous. Cyanobacter blooms are often a response to nutrient loading, but some species are *especially responsive to excess phosphorous*. This is because, unlike the vast majority of organisms, many cyanobacter exploit ('fix') atmospheric nitrogen as a nutrient. When phosphorus becomes over-abundant, most species increase growth and reproduction until the next most-limiting nutrient, usually nitrogen, becomes scarce. In such an environment, *nitrogen-fixers have an advantage so they soon outcompete other species and dominate the community*. Human activity tends to increase the availability of nitrogen and phosphorus in ecosystems, thus increasing the frequency of cyanobacterial blooms." (Emphasis added) (Peterson Environmental Consulting, Inc., 2002)

The State Water Commission has neither provided nor cited results of investigations of the impacts on the fish and wildlife values of the Sheyenne River of operation of the Devils Lake outlet at 250 cfs constrained only by a 750 mg/L sulfate limit in the river. Nor has the State Water Commission provided any evidence that those adverse impacts will not be even more severe than those identified by the U.S. Army Corps of Engineers for a 300 cfs Pelican Lake outlet constrained by a 300 mg/L sulfate limit and 600 cfs total flows in the Sheyenne River. Indeed, the only way for the impacts of the State Water Commission's 250 cfs outlet to be less severe would be if its operations were limited to the point where its effect on the level of Devils Lake would be virtually nil.

IMPACT ON AGRICULTURAL LANDS

The sixth factor that the Ramsey County and Towner County Water Resource Boards are required to consider under NDAC § 89–02–01–09.2 when evaluating the State Water Commission's application for a permit to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs is:

"The project's impact on agricultural lands."

Because the State Water Commission has neither provided nor cited results of investigations demonstrating that increasing the capacity of the Devils Lake outlet from 100 cfs to 250s cfs would have a significant effect in lowering the level of the lake, there is no evidence that it would have a positive impact on agricultural lands in the Devils Lake Basin. On the other hand, the U.S. Army Corps of Engineers' Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement has identified the following impacts to agricultural lands along the Sheyenne River resulting from operation of a 300 cfs Pelican Lake outlet constrained by a 300 mg/L sulfate limit and 600 cfs total flows in the Sheyenne River:

—"As in the case of an overflow, farms that withdraw water from the Sheyenne River or the Red River for irrigation could suffer reduced crop yields from the lower river water quality associated with an outlet. Exacerbated flooding in the Sheyenne River could damage agricultural property, including lands, equipment and structures . . . (FEIS p. 6–49)

—"An outlet from Devils Lake could diminish property values along the Sheyenne River. The potential adverse impacts to property values would be based on damage in the riparian zone, exacerbated flooding risks, and reduced water quality for agriculture or recreation. (FEIS p. 6–49)

—"Induced flood plain salinization resulting from the rising water tables of floodplain and adjacent soils in the Sheyenne River above a 'critical depth.' (FEIS p. 6–67)

—"Additional salt loading to the floodplain could result from both overbank flooding with mixed Devils Lake/Sheyenne River water and intrusion of this water into adjacent floodplain soils as infiltrated floodwater and groundwater flow. Seepage outflow of mixed Devils Lake/Sheyenne River water could produce additional salt loading to adjacent floodplain soils during periods when the river is contained within the channel. (FEIS p. 6–67)

—"The outlet would result in increased salinity hazards associated with use of the water for irrigation purposes." (FEIS p. 6–72)

The impacts on agricultural lands along the Sheyenne River resulting from the operation of a 250 cfs Devils Lake outlet constrained only by a 750 mg/L limit in the Sheyenne River obviously would be much more severe than those of a 300 cfs Pelican Lake outlet constrained by a 300 mg/L sulfate limit and 600 cfs total flows in the Sheyenne River, but the State Water Commission has neither provided nor cited results of investigations qualifying and quantifying those impacts.

REQUIREMENT FOR EASEMENTS

The seventh factor that the Ramsey County and Towner County Water Resource Boards are required to consider under NDAC § 89–02–01–09.2 when evaluating the State Water Commission's application for a permit to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs is:

"Whether easements are required."

Because the evidence is unequivocal and unrefuted that operation of the Devils Lake outlet at 250 cfs will flood and adversely affect downstream lands, it is instructive to note what the U.S. Army Corps of Engineers' Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement stated about the need for easements for a 300 cfs Pelican Lake outlet constrained by a 300 mg/L sulfate limit and 600 cfs total flows in the Sheyenne River:

"Exacerbated flooding along the Sheyenne River could damage agricultural property, including lands, equipment and structures; however, the purchase of flowage easements has been included in the project first cost to address these impacts. (FEIS p. 6–49)

"The outlet alternative identified may cause some induced flooding along the Sheyenne River. The selected plan involves a 300 cfs constrained flow. The channel capacity of the Sheyenne River between the outflow pipeline and Lake Ashtabula is generally 600 cfs. Below Lake Ashtabula, the channel capacity is approximately 2,000 cfs. Flows form the proposed outlet are not expected to induce flooding below Lake Ashtabula. At some areas on the upper Sheyenne River, 600 cfs would be out-of-bank. The NDSWC completed a channel capacity study in June 1997. This study identified some areas, through cross-sections, that were low. Most of the areas are old ox-bows and meander areas of the river. One area would be able to handle the 600 cfs flow if a set of culverts were removed or replaced with larger culverts. The report concluded: 'Aerial photos of the channel from Maddock to the Warwick (sic) showed that 600 cfs to 700 cfs could be contained within the channel. Downstream of Warwick, the river meanders significantly, resulting in oxbow flooding at lower

flows. In this reach, there is the potential for small, isolated over-bank flow at 600 cfs, mainly in the areas of marshy low lands that are not farmland.' Areas of over-bank flow at 600 cfs have been identified, and flowage easements are proposed for those areas.

"The cost of easements along the upper Sheyenne River, sufficient to cover projected out-of-bank induced flooding between the outlet of the pipeline at Peterson Coulee and Lake Ashtabula, is estimated to be $3,810,000. Approximately 191 owners may be involved. These owners would include the Fort Totten Reservation and the State of North Dakota. Administrative costs appear high because of the large number of owners (191), and anticipated large number of condemnations, and a higher contingency because of the uncertainties in this project. Current data and projections indicate minimal to no appreciable impacts downstream of Lake Ashtabula; thus there is little to no discernable need for flowage easements in that section." (FEIS pp. 7–10, 7–11)

The Corps' estimate of the need and costs for flowage easements is based on erroneous information from the State Water Commission in 1997 indicating that the channel capacity of the Sheyenne River from Maddock to Warwick is 600 cfs to 700 cfs. However, the capacity of the channel was subsequently determined by the U.S. Bureau of Reclamation to be 300 cfs at Warwick (U.S. Bureau of Reclamation, 2003) and the channel capacity of the 30 miles of the Sheyenne River upstream from Warwick is even less. Consequently, the $3,810,000 estimated by the U.S. Army Corps of Engineers in 2003 to be needed to acquire flowage easements from 191 landowners along the Upper Sheyenne River for its 300 cfs Pelican Lake outlet undoubtedly substantially underestimates both the number and the cost of flowage easements for a 250 cfs Devils Lake outlet.

It is important to note again that under NDCC 61–32–03:

". . . the water board *may not issue a permit until flowage easements are obtained*." (Emphasis added)

However, the State Water Commission not only has not obtained flowage easements from the 191 landowners identified by the Corps of Engineers as being required for the operation of a 300 cfs Pelican Lake outlet constrained by a 300 mg/L sulfate limit and total flows of 600 cfs in the Sheyenne River, but it has provided no information what-so-ever on the number, extent or cost of flowage easements required for its 250 cfs Devils Lake outlet constrained only by a 750 mg/L sulfate on the Sheyenne River.

OTHER FACTORS UNIQUE TO THE PROJECT

Finally, in evaluating the State Water Commission's application for a permit to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs, NDAC § 89–02–01–09.2 requires the Ramsey County and Towner County Water Resource Boards to consider:

"Other factors unique to the project."

Certainly, one of the greatest concerns about increasing the capacity of the Devils Lake outlet to 250 cfs expressed by communities along the Sheyenne River downstream from the project has been the adverse impacts on water quality and the increased cost of water treatment for those utilizing the Sheyenne River for their municipal supplies (MacPherson, 2009; Oleson, 2009; Bonham, 2009; Associated Press, 2009a, 2009b, 2009c; D. Olson, 2009; Schmidt, 2009a, 2009b; Browne, 2009; Wetzel, 2010).

It is both relevant and instructive, therefore, to consider what the U.S. Army Corps of Engineers concluded in its Final Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement regarding the impacts of a 300 cfs Pelican Lake outlet constrained by a 300 mg/L sulfate limit and 600 cfs total flows in the Sheyenne River on downstream municipal and industrial water supplies:

"Based on analysis of available date regarding the operations of the *eight affected municipal water treatment facilities*, a computer spreadsheet model was developed to estimate the annual increase in cost that can be expected at each facility due to the change in water quality. Hardness was identified as the major water user concern associated with an outlet. Ion exchange would be needed to treat sulfates but, due to the limited water quality effects resulting from a 300 mg/L sulfate constrained outlet, it was determined that softening was adequate treatment for water users. Cost increases would result from increased softening costs (due to increased chemical feed rates and increases in sludge handling and disposal), and increased

capital and operations costs if treatment or an alternative water supply is required to restore the treatment facility finished water quality to without-outlet conditions.

"Modeling showed the total annualized costs for increased softening would range from $25,000 per year to $56,000 per year, depending on the modeled water quality future. The total annualized cost for capital improvements or alternate source water development required to bring the with-outlet project water to the water quality of without-outlet product water ranged from *$1,757,000 per year to $3,304,000 per year*. Sulfate concentration is not a major concern along the Sheyenne or Red Rivers with the Pelican Lake outlet.[3] In most cases, treatment by ion exchange was found to be the least-cost alternative if without-outlet water is required." (Emphasis added) (FEIS p. 6–51)

However, it is just not municipal water supplies that are affected by operation of the Devils Lake outlet:

"Interviews were conducted with all of the industrial river water users along the Sheyenne River and Red River of the North. Two were expected to incur increased costs as a result of the Devils Lake outlet operations. The sugar beet processing facility is expected to have increased lime softening costs as a result of the outlet. The coal-fired power plant's increased costs relate to additional need for ion exchange water purification for boiler water. On the basis of one of the sample water quality data sets, annualized costs would be expected to be $1,200 per year for the sugar beet processing facility and $30,700 per year for the power plant.[4] (FEIS p. 6–52)

On January 2, 2010, the Associated Press reported that:

"David Glatt, environmental health chief for the Department of Health, said no community along the *affected stretch* of the Sheyenne River currently uses it for drinking.

"'You could go to (750 milligrams per liter), but only if it's not designated as a municipal water supply,' Glatt said. 'That stretch, there is no municipality pulling water out of the Sheyenne.'

"Glatt said that the higher sulfate levels should be safe for fish, livestock and riverbank vegetation. In any case, the upper Sheyenne River has *naturally high sulfate levels that go above 450 milligrams per liter in spots,* he said." (Emphasis added) (Weixel, 2010)

At best, Mr. Glatt's statements constitute a deliberate misrepresentation of the facts in an attempt to obfuscate and evade addressing the impacts of a 250 cfs Devils Lake outlet on downstream municipal water users.

First, as a fundamental consideration, it is important to note that North Dakota Administrative Code § 33–16–02.1–02 dealing with Standards of Quality of Waters of the State states explicitly, in part, that:

"The State and public policy is to maintain or improve, or both, the quality of waters of the State and to maintain and protect existing uses . . . *Waters not being put to use shall be protected for all reasonable uses for which these waters are suitable*." (Emphasis added)

Prior to operation of the Devils Lake outlet, the waters of the Sheyenne River downstream from the outlet were suitable for use as domestic or municipal water supplies, and they are being used as a municipal water supply by eight communities downstream from Baldhill Dam. By Mr. Glatt's own admission, increasing the level of sulfate in the Upper Sheyenne River as a result of operation of the outlet will cause those waters no longer to be suitable for domestic or municipal water supplies—a clear violation of State policy.

Second, Mr. Glatt's statement that no community along the "affected stretch" of the Sheyenne River currently uses it for drinking not only is demonstrably false, but also is deliberately misleading. In an attempt to evade the issue, Mr. Glatt apparently defines the "affected stretch" of the Sheyenne River as only the portion upstream from Baldhill Dam where the Department of Health is proposing permanently to increase the sulfate limit from 450 mg/L to 750 mg/L. Although that may be the portion included in the Department of Health's proposed emergency rule, the entire length of the Sheyenne River, as well as the Red River, downstream from

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[3] Sulfate concentration is a major concern with a 250 cfs Devils Lake outlet constrained only by a 750 mg/L sulfate limit in the Sheyenne River (Browne, 2009; MacPherson, 2009; Wetzel, 2010), and the increased sulfate concentrations would be accompanied by higher levels other constituents, including TDS and hardness, thus increasing the water treatment costs estimated by the Corps for those constituents as well.

[4] These costs also would be increased as a result of further degradation of water quality caused by increased discharges from the outlet.

Baldhill Dam also will be "affected" by the increased load of sulfate and other pollutants resulting from the increasing the discharges of the Devils Lake outlet from 100 cfs to 250 cfs.

Indeed, the fallacy of Mr. Glatt's claim that no community along the "affected stretch" of the Sheyenne River uses it for drinking is clearly demonstrated by the fact that his own agency has committed $2 million—and the State Water Commission has committed another $9.2 million—to install a reverse osmosis water treatment system in Valley City's new $15.6 million water treatment plant to reduce the high levels of sulfate in the Sheyenne River resulting from operation of the Devils Lake outlet (MacPherson, 2009). In addition, West Fargo estimates that installing a system to treat sulfates could add $14 million to the cost of a new water treatment plant (Schmidt, 2009b) and Fargo will receive $9 million from the State to enhance treatment of sulfates in its new water treatment plant (Schmidt, 2009a). All of these additional water treatment expenditures are made necessary by the increased levels of sulfate in the Sheyenne River caused by operation of the Devils Lake outlet.

Mr. Glatt's statement that the Upper Sheyenne River has naturally high sulfate levels that go above 450 mg/L "in spots" also is deliberately misleading and designed to obscure and misrepresent the facts. It is true that sulfate levels have occasionally exceeded 450 mg/L in some "spots" in the Upper Sheyenne River, but most of those have been in the extreme Upper Sheyenne River above the Devils Lake outlet. For example, Schuh and Hove reported that:

". . . sulfate samples at Warwick (30 miles downstream from the Devils Lake outlet) never exceeded 300 mg/L before 2,000 and did so only about 25 percent of the time after 2000. Harvey samples (approximately 30 miles upstream from the Devils Lake outlet), however, exceeded 300 mg/L about 40 percent of the time during the 1990s, and were below 300 mg/L only three times following the year 2000 . . ." (Schuh and Hove, 2006)

Data presented in their report show that the maximum levels of sulfate reached in the Sheyenne River at two Harvey sites were 480 mg/L and 610 mg/L, but the maximum levels reached at two Warwick sites were 230 mg/L and 307 mg/L (Schuh and Rove, 2006). Of course, what Mr. Glatt did not say was that sulfate levels in the Sheyenne River downstream of the Devils Lake outlet never reached 450 mg/L before July 2009 when the North Dakota Department of Health vacated the North Dakota Pollution Discharge Elimination System permit it had issued for the outlet and implemented an emergency rule increasing the sulfate limit in the Upper Sheyenne River from 450 mg/L in order to allow the outlet to discharge 100 cfs of water from West Bay containing 600–700 mg/L of sulfate. What Mr. Glatt also did say is that, by increasing the sulfate limit in the Upper Sheyenne River from 450 mg/L to 750 mg/L, the Department of Health is ensuring that sulfate levels, not just "in spots," but in throughout the entire length of the Upper Sheyenne River from the outlet to Lake Ashtabula will exceed 450 mg/L when the outlet is operating, and they will increase from 300 mg/L or less to nearly 450 mg/L in the Lower Sheyenne River.

CONCLUSIONS

North Dakota Governor and State Water Chairman John Hoeven has submitted Application to Drain No. 3457 to the Ramsey County and Towner County Water Resource Boards for a permit to increase the capacity of the Sate Water Commission's Devils Lake outlet from 100 cfs to 250 cfs. However, the State Water Commission has failed to provide or to cite the results of the investigations required by North Dakota Century Code § 61–32–03 to disclose whether the quantity of water which will be drained from Devils Lake will flood or adversely affect lands of downstream landowners. The State Water Commission also has failed to obtain flowage easements from the downstream landowners whose lands will be adversely affected, as required by NDCC § 61–32–03.

The State Water Commission also has failed to provide any substantive information regarding the volume of water proposed to be drained as a result of increasing the capacity of the Devils Lake outlet from 100 cfs to 250 cfs, and the resulting impact on the Sheyenne River, regarding adverse impacts that may occur to the lands of lower proprietors, regarding the project's impact on flooding in the project watershed, regarding the project's impact on waters having recognized fish and wildlife values, regarding the project's impact on agricultural lands, regarding easements that will be required, and regarding other factors unique to the project that would permit the Ramsey County and Towner County Water Resource Boards to evaluate the application objectively under the provisions of North Dakota Administrative Code § 89–02–01–09.2.

Although the State Water Commission has failed to provide substantive information to enable the Ramsey County and Towner County Water Resource Boards to discharge their responsibilities in evaluating the application under NDCC § 61–32–03 and NDAC § 89–02–01–09.2, the preponderance the evidence available from investigations conducted by other agencies, notably the U.S. Army Corps of Engineers, unequivocally demonstrates that increasing the capacity of the Devils Lake outlet from 100 cfs to 250 cfs will adversely impact the Sheyenne River, flood and adversely affect the lands of lower proprietors, adversely impact fish and wildlife, adversely impact agricultural lands, require at least 191 flowage easements costing in excess of $3.8 million, increase downstream municipal water treatment costs by at least $1.7 to $3.3 million per year, and will not have a significant effect in reducing flooding problems in the Devils Lake Basin.

Because the State Water Commission has failed to conduct the investigations and to provide the information required under NDAC § 61–32–03 and NDAC § 89–02–01–09.2 and because the available evidence overwhelmingly and unequivocally confirms that the State Water Commission's proposal to increase the capacity of its Devils Lake outlet from 100 cfs to 250 cfs is devoid of merit or justification, the Ramsey County and Towner County Water Resource Boards have no alternative under the applicable statutes and regulations except to deny the State Water Commission's Application to Drain No. 3457 for a permit to increase the capacity of its Devils Lake outlet to 250 cfs.

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LETTER FROM GARY L. PEARSON, D.V.M.

APRIL 29, 2009.

MS. KATHY STEINER,
Managing Editor, The Jamestown Sun, P.O. Box 1760, Jamestown, North Dakota 58402–1760.

TO THE EDITOR: With Jamestown and Pipestem reservoirs reaching record levels this spring, thousands of man-hours and millions of dollars are being expended in dealing with the flood. Although there is great concern about where all the water will go, it seems that little attention is being paid to where it came from.

A 1981 study by scientists at North Dakota State University determined that wetland drainage had resulted in a 64–180 percent increase in the drainage areas of tributaries of the Red River and a 36 percent increase in their maximum daily flows. The study concluded that, "land drainage is a factor aggravating the flooding problem in eastern North Dakota."

In commenting in 1985 on the 37,000-acre Oak Creek Drain in Wells and Eddy counties, the U.S. Army Corps of Engineers stated specifically that, "the cumulative effects of various drainage projects such as this would indeed have an adverse effect on the regulation of Jamestown Reservoir for flood control."

A dozen wetland drainage projects, including the Oak Creek drain, developed by the Wells County Water Resource Board and approved by the State Engineer drain some 200,000 acres into the James River. Additional tens of thousands of acres have been drained in other public and private projects throughout the Upper James River Watershed in Wells, Eddy, Foster and Stutsman counties, and that water also ends up in Jamestown Reservoir.

Just how great is this "adverse effect"? The water content of the snow in the Upper James River Watershed this spring was estimated at 4 to 4.5 inches. The area of Jamestown Reservoir at elevation 1,454 feet is 13,206 acres. Four inches of runoff from 200,000 acres would contribute 66,667 acre-feet of water to the reservoir. This means that the drainage from just those 12 projects in Wells and Eddy

counties may have increased the level of Jamestown Reservoir by over 5 feet, raising the crest from 1,449 feet to the top of the emergency spillway at 1,454 feet. This also means that an additional 2.5 weeks of 1,800 cubic feet per second releases will be required to remove that additional water from the reservoir. Add in all of the other tens of thousands of acres that have been drained in the Upper James River Watershed and the cumulative effects on the regulation of Jamestown Reservoir for flood control are what Jamestown and those living downstream are dealing with right now.

Sincerely,

GARY L. PEARSON.

LETTER FROM GARY L. PEARSON, D.V.M.

JULY 13, 2009.

The Honorable HILLARY CLINTON,
Secretary of State,
Washington, DC 20520.

DEAR SECRETARY CLINTON: According to information from North Dakota Senator Byron Dorgan's office:

"U.S. Senator Byron Dorgan (D-ND) said Thursday, July 9, 2009, that Secretary of State Hillary Clinton informed him she has initiated contacts with the Canadians about the dike on the U.S.-Canada border that has caused significant flooding in eastern North Dakota.

"Senator Dorgan talked to Secretary Clinton last evening about the issue. Dorgan had previously asked the Secretary of State to initiate contacts with the Canadian Government to resolve the dispute.

"Dorgan said he believes the dike on the northeastern border clearly violates the Boundary Waters Treaty . . ."

Based on the information from Senator Dorgan's office, it appears that he may have neglected to mention additional relevant information regarding this Boundary Waters Treaty issue.

For example, Senator Dorgan goes on to say:

"The desire of Canadians to protect themselves against flooding is understandable, but it is not understandable that they keep in place a barrier that maximizes flooding on the North Dakota side and minimizes flooding on the Canadian side. That is something that I believe violates the Boundary Waters Treaty and needs to be resolved in consultations between the U.S. State Department the Canadian government."

A fundamental fact of obvious importance is that the water that causes the flooding on the south side of the border comes from North Dakota, not Canada. However, Senator Dorgan also neglects to mention the significant contribution to the flooding on the North Dakota side of the border resulting from the drainage of tens of thousands of acres of wetlands throughout the Pembina River watershed in North Dakota over the past 50 years. Much of this drainage was done without permits or regulation so exact figures on the acreage of wetlands drained and resulting volume of water contributing to downstream flooding are not readily available. However, the drainage of Rush Lake in Cavalier County, North Dakota, provides one concrete example of the contribution of wetland drainage to the flooding on the North Dakota side of the border.

Rush Lake is located in Cavalier County, North Dakota, approximately 6 miles south of the Canadian border at the headwaters of Snowflake Creek and West Snowflake Creek, which flow northeastward to join the Pembina River on the north side of the border in Canada. The Rush Lake wetland complex originally consisted of the 650-acre main lake and an additional 6,500 acres of adjacent wetlands. The lake was approximately 3.5 feet deep and the adjacent marshes had a depth of approximately 2.5–3 feet. The Rush Lake watershed included an additional 23,000 acres of non-contiguous wetlands.

In the early 1960s, evidence of illegal wetland drainage into Rush Lake was reported by one of the adjacent landowners. However, instead of addressing this illegal drainage, the Cavalier County Water Management Board developed a plan in 1967 simply to pass the problem on downstream by draining most of the Rush Lake complex into Snowflake and West Snowflake Creeks. Since then, most of the 23,000 acres of additional non-contiguous wetlands in the Rush Lake watershed also have been drained into Rush Lake and then on into the Snowflake Creeks. The same

thing has happened throughout the rest of Cavalier County and much of the Pembina River watershed in North Dakota.

Because North Dakota water management agencies do not compile reliable data on wetland drainage, it is difficult to know the exact contribution of this one drainage project to the flooding problem at the border. However, if it is assumed that the 30,000 acres of wetlands drained in the Rush Lake watershed had an average maximum depth of 20 inches (as in the Devils Lake Basin to the south), their drainage would contribute an additional 50,000 acre-feet of water to the flooding downstream at the Canadian border in years of high runoff such as this year. That is enough to cover an area of 78 square miles with another foot of water.

Not only is it understandable that Canadians would have a desire to protect themselves against flooding, but they also arguably have a right to protect themselves against exacerbated flooding resulting from North Dakota's failure to regulate wetland drainage that contributes to that flooding.

If Senator Dorgan is correct that the flooding at the Canadian border constitutes a violation of the Boundary Waters Treaty of 1909, then the violation is the result of North Dakota's failure to comply with the Treaty and with its own drainage regulations, which require consideration of:

"The volume of water proposed to be drained and the impact of the flow or quantity of this water upon the watercourse into which the water will be drained.

"Adverse effects that may occur to the lands of lower proprietors. This factor is limited to the project's hydraulic effects such as erosion, duration of floods, impact of sustained flows, and impact on the operation of downstream water control devices.

"The project's impact on flooding problems in the project watershed." (North Dakota Administrative Code § 89–02–01–09.2)

Consequently, I would encourage you, in your discussions with Canadian officials regarding this alleged violation of the Boundary Waters Treaty, to propose either referral of the issue to the International Joint Commission or the establishment of a bi-national panel with representatives of the U.S. Environmental Protection Agency and Environment Canada to conduct a comprehensive, scientific study of the contribution of wetland drainage in North Dakota to the flooding problem at the Canadian border.

Sincerely,

GARY L. PEARSON,
Jamestown, North Dakota.

[From the Times-Record, February 15, 2010]

STATE OFFICIALS NOT DEALING TRUTHFULLY WHEN IT COMES TO DEVILS LAKE OUTLET

North Dakota Department of Health administrator Dr. Terry Dwelle, Environmental Health section chief L. David Glatt and assistant state engineer Todd Sando's February 8 letter responding to the Times-Record's February 2 editorial on the Devils Lake outlet warrants a factual response.

They claim State agencies have informed numerous Federal agencies, including the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Department of State, the White House Council on Environmental Quality and Canadian officials about flooding at Devils Lake and operation of the outlet. What they fail to say is that much of the information they have provided to Federal agencies, Canadian officials and the public regarding the operation of the outlet has been incomplete, misleading and frequently deliberately false.

For example, based on information provided by North Dakota agencies, Senators Byron Dorgan and Kent Conrad and Congressman Earl Pomeroy told U.S. Department of State officials on July 12, 2005 that it was imperative to disregard the concerns of Canadian officials and allow immediate operation of the outlet because: "The longer we postpone the solution to this flooding crisis, the more danger North Dakota, Canada, and surrounding areas will face. The Devils Lake outlet project needs to be in full operation as soon as possible."

By 2008, the $28 million outlet had removed the equivalent of one-tenth of an inch of water from the lake at an annual operating cost of over a quarter of a million dollars, and by 2009 the lake was 10 inches higher than it was before the outlet began operation.

They neglect to mention that State Engineer Dale Frink made deliberately false statements regarding the operation and efficacy of the outlet in his August 30, 2002

application for a North Dakota Pollution Discharge Elimination System permit for the project, or that the Department of Health knew the statements were false but approved the permit anyway.

The statement that, "More than $800 million of State and Federal funds have been spent in recent years on storing more water in the upper basin, raising and protecting infrastructure, and building an outlet" is seriously misleading. Most of the $800 million that have been spent dealing with the rising level of Devils Lake have been Federal taxpayer funds. From 1996 to 1999, while inflows to Devils Lake were averaging 317,000 acre-feet per year, the State spent $3.5 million annually to store an average of only 17,345 acre-feet of water per year. By 2009, when record inflows occurred to Devils Lake, the State's upper basin water storage program was down 769 acre-feet.

Dwelle, Sando and Glatt also neglect to mention the $1.5 million U.S. taxpayer dollars that the State squandered on an experimental irrigation project to utilize water in the upper basin that anyone with a $4.95 calculator could see would be worthless in lowering the lake.

They ignore the contribution of the drainage of 358,000 acres of wetlands in the Upper Devils Lake Basin—condoned and frequently promoted by the State engineer—to the rise of Devils Lake. Because wetlands in the Devils Lake Basin have the capacity to store an average of 1.7 feet of water and because the area had been in a drought for 4 years, 623,500 acre-feet of storage were no longer available as a result of wetland drainage when high levels of precipitation hit the area in 1993. The drainage of those 358,000 acres of wetlands has reduced the net loss of water in the Upper Basin through evaporation by another 239,000 acre-feet per year, indicating that as much as 75 percent of the inflows from 1993 to 1999—and 40 percent of the record inflows in 2009—were the result of the loss of evaporation capacity from drained wetlands.

They say that Devils Lake is "within just 8 feet of an uncontrolled release of the poorest quality, high-sulfate water from the east end," but they neglect to mention that it would take another 1.9 million acre-feet of water to raise Devils Lake to its natural overflow elevation of 1,459 feet, and by that time, evaporation would be removing over 700,000 acre-feet per year—seven times what the outlet operating at 250 cubic feet per second for 7 months would remove. They also do not mention that it would take 6 years for the outlet operating at 250 cfs just to remove last spring's inflows.

They claim that their objective is to avoid a catastrophic uncontrolled overflow from Devils Lake, but by not taking action to prevent the city of Devils Lake from lowering the natural outlet to 1,458 feet, they have actually doubled the chance (from 3.2 to 6.1 percent) of a major uncontrolled overflow (where the discharge would exceed those of the State's 250 cfs outlet by another 50 cfs) to the Sheyenne River within 10 years. Lowering the outlet to 1,458 feet means that an additional 269,000 acre-feet of poor quality Devils Lake water would be discharged initially into the Sheyenne River as a result of lost storage if the lake should rise to its overflow elevation, and the discharge would be increased by 23,000 acre-feet every year as a result of lost evaporation from the lake because of its smaller surface area.

They claim that the proposed increase of the sulfate limit in the Sheyenne River to 750 parts per million "is protective of aquatic life, as well as recreational and agricultural uses," but they ignore the numerous serious adverse impacts to aquatic life and recreational and agricultural use of the Sheyenne River identified by the U.S. Army Corps of Engineers for an outlet constrained by a much lower 300 ppm sulfate limit in the Sheyenne River.

They neglect to mention that data from the State Water Commission show that the 450 ppm sulfate limit originally established by the Department of Health for the Sheyenne River was never reached in the area downstream from the outlet before operation of the outlet began. Nor do they mention that the department's own regulations require it to maintain water quality in streams when it is better than the established standards.

They say that the awarding of $12 million to incorporate reverse osmosis in Valley City's new water treatment plant in order to remove sulfates and other minerals "is a clear signal from the State that the interests of Valley City are important and will be protected." They do not mention that the reason a reverse osmosis system is necessary is to treat the increased levels of sulfates and other minerals from the Devils Lake outlet. Nor do they mention that the Corps of Engineers has determined that operation of an outlet constrained by a much lower 300 ppm sulfate limit in the Sheyenne River would increase downstream water treatment costs by $1.7 to $3.3 million annually.

Governor John Hoeven appointed the administrator of the Health Department and, as chairman of the State Water Commission, he was instrumental in appoint-

ing the State engineer and is responsible for oversight of the State engineer and his staff. It is time for State officials to start dealing responsibly and truthfully with the problem of rising water levels at Devils Lake.

PREPARED STATEMENT OF THE CITY-COUNTY HEALTH DISTRICT, VALLEY CITY, ND

Senate Energy and Water Appropriations Subcommittee of the U.S. Senate: As the Health Board which governs City-County Health District, the public health unit for Barnes County and Valley City, we have several serious concerns regarding Devils Lake outlet water being pumped into the Sheyenne River and the implementation of an interim emergency rule (ND Century Code 28–32–03) allowing increased sulfate concentrations from the headwaters of the Sheyenne to 0.1 miles south of Baldhill Dam.

We are primarily concerned about the lack of an environmental impact study. Even the most minor city or county projects require studies to determine the impact on the environment and/or anthropological artifacts. Yet this project, which will have an enormous impact on downstream users, lacks any kind of impact statement. We are concerned about, but not limited to the following:

—The Ecology of the Sheyenne River;
—The increase in contaminants in the Sheyenne coming from Devils Lake which can affect people and animals;
—Cost of treating the water in the Sheyenne with increased contaminants;
—Increase risk of flooding of the Sheyenne River;
—Ineffective, costly attempts at solutions without thoroughly evaluating the problem.

The Sheyenne River, and hence, Valley City, currently has good water quality (with sulfates in the 200 mg/L range). We strongly urge a comprehensive, scientific study of both the root causes for the rising of Devils Lake and the impact on the Sheyenne River and those who come in contact with it. The study must be done by unbiased out-of-State professionals. It should include an expert hydrologic assessment of the entire Devils Lake and Sheyenne River areas, and the LIDAR flight study which has been authorized and appropriated by the Senate Energy and Water Appropriations Subcommittee.

This is not just about an increase in sulfate levels—this is about the life of the Sheyenne River in the future and all those who depend on it, in Barnes County and those who live down stream.

PREPARED STATEMENT OF JOE STICKLER, VALLEY CITY, ND

DEVILS LAKE OUTLET & UPPER BASIN STORAGE AND THE NEED TO PREVENT HARM TO THE SHEYENNE RIVER

The Devils Lake outlet concept has never appeared like intelligent water management. The testimony to this assertion is voluminous and doesn't need to be detailed here. This is particularly alarming because water management is the one of the highest of priorities for human civilization. If this current wet cycle is a regional effect of global climate change, many more of area residents will realize they have properties too close to the waterways. Meager information of the impact on the environment exists. It's as if we're being told, "It's OK nothing bad is going to happen, trust us." Most distressing is the plan (unless recently modified) does not include any component for ongoing study of the environment if the outlet flows are increased. There are some data bases on various components both inorganic and biological that are present in the Sheyenne River. Any plan should include funding for continued monitoring of these components. There should be prior agreements about what limits in various parameters (not just sulfate concentrations) would necessitate the closure of the outlet.

Thank you for considering this testimony.

PREPARED STATEMENT OF SHARON E. AND JAMES B. BUHR, MD, MERITCARE CLINIC, VALLEY CITY, ND

Chairman/Senator Dorgan and the U.S. Senate Energy and Water Appropriations Subcommittee: Thank you for allowing us to offer testimony by e-mail related to the 2–19–10 Hearing on Devils Lake Outlet that was held in West Fargo. As residents of Valley City we have grave concerns over the fact that North Dakota has not con-

ducted a comprehensive study of the Devils Lake and Sheyenne River basins, not has a comprehensive plan been established.

A great deal of money has been spent on trying to solve a problem without a comprehensive study. Dikes around Devils Lake ($800 million) have been built and $28 million has been spent building an outlet from the west end of Devils Lake into the Sheyenne, yet that has taken off only a miniscule amount of water. Neither of these so-called solutions have attacked the root problem: the water coming into the lake.

We agree with what Senator Dorgan said at the February 19 hearing: "more work needs to be done to retain water in the upper Devils Lake basin." Wetlands restoration has always been a good idea for the benefits it provides for wildlife and the health of the environment. Now it seems imperative to avert a catastrophe.

OUR REQUEST.—Before any additional Devils Lake water is discharged through the outlet, a comprehensive, scientific study of both the root causes of the rising lake level and all the impacts of Outlet water on the Sheyenne River must be conducted. This must be done in a swift manner, and the study conducted by outside, (out-of-State) independent experts who do not have any of the political pressures that dominate North Dakota water issues.

As part of this study we ask that the soil in and around the area where the Tolna Coulee would overflow into the Sheyenne River be evaluated, to learn whether this area needs to be "armored", in order to avoid a devastating wash-out.

We ask that this study along with the LIDAR technology that has been indicated would be also used for part of the assessment, would then be the basis for a strategic plan for Devils Lake and Sheyenne River areas.

The North Dakota State Water Commission claims that they have done the necessary studies to evaluate these issues, but this is not true. We ask that this subcommittee provides oversight and funds to see that this study is conducted properly.

Thank you for your interest and for allowing us to send you this testimony.

RESOLUTION—DISTRICT 24 DEM-NPL PARTY—FEBRUARY 28, 2010

PROBLEMS FROM DEVILS LAKE OUTLET

WHEREAS the North Dakota Department of Health recently proposed an emergency rule to permanently raise the maximum sulfate in the upper Sheyenne River from 450 mg/L to 750 mg/L in order to increase the amount of water being discharged from Devils Lake to the Sheyenne via the Outlet;

WHEREAS the proposed increase in maximum sulfates in the Sheyenne would violate the Department of Health's statutory mandate to "act in the public interest to protect, maintain, and improve the quality of the waters in the State" (NDCC 61–28–01);

WHEREAS incoming Devils Lake water, much more polluted than water in the Sheyenne River, contains twice the amount of phosphorous, nitrate, and arsenic as in the Sheyenne—along with 10 times the chloride and 4 times as much sulfate;

WHEREAS the city of Devils Lake does NOT use lake water to drink, but Valley City would be forced to do so under the proposed rule change; and Valley City residents would have to bear substantial increases in water-treatment costs due to the much-higher levels of contaminants in incoming Devils Lake water;

WHEREAS, while harming the Sheyenne and the people living along the river, the proposed rule change would not prevent Devils Lake from rising and, in fact, would further divert attention away from taking truly-effective preventative action by restoring many of the 358,000 acres of wetlands that have been artificially drained INTO Devils Lake;

WHEREAS the Sheyenne River contains more species of fish (50) than any other North Dakota tributary, but Devils Lake contains only 11 species of fish; and the Sheyenne also contains critical water-filtration species of mussels that cannot survive in Devils Lake; but as water in the Sheyenne becomes contaminated like that of Devils Lake, aquatic species will inevitably be lost from the Sheyenne;

WHEREAS many downstream families were forced to evacuate their homes during the devastating flooding of the Sheyenne River last spring, and the impact of the proposed increase in water from the Devils Lake basin will worsen future flood events and riverbank erosion;

WHEREAS, in 6 short days last fall, more than 700 people signed a petition asking for completion of a comprehensive environmental impact study;

WHEREAS, it is unknown what impacts increasing the flow of contaminated Devils Lake water into the Sheyenne would impose: on the health of people who drink downstream water, on the costs downstream people pay for water treatment, on the health of the 50 fish species currently inhabiting the waters of the Sheyenne, on

the severity of future downstream flooding, on the speed with which downstream riverbanks are eroding, on the tourism and recreational industries that currently flourish downstream, and on the magnificent beauty of the Sheyenne River;

NOW, THEREFORE BE IT RESOLVED THAT District 24 of the North Dakota Dem-NPL Party calls on the State to refrain from discharging ANY additional water through the controversial Devils Lake Outlet until after an independent, outside body that is free of the political pressures that dominate North Dakota water issues has completed a comprehensive, scientific review of both the root causes of rising water on Devils Lake and all the effects of Outlet water on the Sheyenne River; and until the harms and problems thus documented have been completely removed.

PREPARED STATEMENT OF MATTHEW PEDERSEN, VALLEY CITY, ND

Dear Senator Dorgan, I would like to first thank you and your staff for conducting the formal hearing in West Fargo to discuss the matters associated with the Devils Lake outlet and the associated chronic flooding.

I am a resident of Valley City, North Dakota and I have grave concerns about the management of Devils Lake. My primary concern is that I don't feel we have a strategic plan on how to address the rising waters. I see absolutely no coordinated effort to develop a comprehensive plan of controlling the inflows or creatively and safely draining it. The $800 million spent on levees appears to be working properly and thanks for your efforts in this multi-year project. However, all of the other efforts appear to be tactical failures not aligned to a long-term strategy. The State Water Commission needs some additional leadership to drive the challenging conversations on options of controlling inflows and exploring additional outflow scenarios. The risks are too great not to act on stopping artificial drainage and working to reverse the negative results of such actions. This will require that the State Legislature and State Water Commission demonstrate a new level of leadership and bipartisanship.

I am a firm believer in external consultants to infuse some fresh perspective into an organization. I believe the State Water Commission is in dire need of a comprehensive hydrological assessment of the Devils Lake and Sheyenne River basins. Hopefully this study can also take advantage of your LIDAR technology. The core objective of this external, scientific-facts based study would be to develop the strategic plan for Devils Lake with tactical, yearly solutions/approaches that map to the overall strategy. The plan would identify the triggers that would initiate a certain pre-planned tactic to address the matter at hand. This study would need to be a collaborative effort of communities at risk of Devils Lake and Sheyenne River flooding. The impacted communities would be part of the planning process and the triggers driving certain courses of action would be widely known and agreed upon by these communities.

The timing of this study is immediate as I feel the State Water Commission has a horrible natural (plus human influenced) disaster on their hands. In parallel to this strategic planning and comprehensive study, swift action is necessary to stop additional dredging of the Tolna Coulee and equally important evaluations should be conducted on the stability of the soil in this Tolna Coulee and need for armoring it to avoid a catastrophic wash-out flooding the entire Sheyenne River valley destroying historic communities like Valley City in its horrific path.

I thought it was embarrassing and pathetic that the State Water Commission could not answer fundamental questions posed to them by yourself as well as members of the audience. I unfortunately have no faith in the leadership of the State Water Commission or their problem-solving abilities and I urge you to secure funds for this comprehensive study to develop a strategic plan to instill some direction and leadership into the State Water Commission. I also urge you to lobby for an immediate assessment of the vulnerabilities lying under the surface of the Tolna Coulee as I feel immense armoring of this area to be required in 2010 to avoid a horrible wash-out and further embarrassment to the State Water Commission.

Thank you Senator Dorgan and your colleagues on the Senate Energy and Water Appropriations Subcommittee for the opportunity to provide my testimony.

PREPARED STATEMENT OF SUSAN KRINGLIE, VALLEY CITY, ND

Dear Senate Energy and Water Appropriations Subcommittee, I strongly believe that before any additional Devils Lake water is discharged through the outlet, independent, outside experts must complete a comprehensive, scientific study of both the root causes of rising lake level and all the impacts of Outlet water on the Sheyenne River. This study must include an expert hydrologic assessment of the entire Devils

Lake and Sheyenne River areas, and the LIDAR flight study which has been authorized and appropriated by Senate Energy and Water Appropriations Subcommittee. This study must be carried out by out-of-State professionals who are free of the political pressures that dominate North Dakota water issues. These are the following valid points of discussion from my hometown, Valley City, North Dakota.

—*The Outlet is Not Effective*.—North Dakota constructed an outlet costing $28 million, and wants to add another set of pumps at a cost of $16.2 million. Its basic operating cost comes to $250,000 per year. Yet from 2005–2008, pumping at 100 cfs, this outlet removed only a bit over 0.1 inch from the lake. By 2009 the lake was 10 inches higher than it was before the outlet began operation.

—*It is Time to Prevent the Lake From Continuing to Rise*.—So far, at least $800 million in taxpayer funds have been spent trying to deal with the results of the rising level of Devils Lake—not even counting the cost of the outlet! But the underlying causes, including artificial drainage into the lake, remain largely unaddressed.

—*Shut Off "The Faucet" (i.e., the water coming into Devils Lake)*.—Annually, water from 358,000 Upper Basin acres of artificially drained wetlands pours into Devils Lake. Viewing Devils Lake as a bathtub, it makes no sense to discharge highly polluted water from the tub's drain without first TURNING OFF the faucet artificially dumping water in. Corps of Engineers conservatively states that reinstating the water-storing capacity of the Upper Basin wetlands would prevent Devils Lake from rising 1 foot each year.

—*No More Dredging in the Tolna Coulee*.—Even though we're told the lake might ultimately overflow at the Tolna Coulee, the city of Devils Lake was allowed to dredge out 1 foot this year, thus significantly INCREASING the possibility that such an overflow could occur. Please mandate that the Tolna Coulee cannot be further dredged, and that the comprehensive study include an evaluation as to whether the Tolna Coulee needs to be "armored" (reinforced so that it will not wash out).

PREPARED STATEMENT OF RICHARD AND TERRY LEE, ADAM AND ANNIE JOHNSON, WANDA ETZELL, AND DENNIS AND BONNIE ROWELL, VALLEY CITY, ND AND ENDERLIN, ND

Americans do not want to believe that their government would implement any major project having serious harmful consequences without first having thoroughly studied (and disclosed) all of the issues contributing to the problem being addressed, and all of the impacts resulting from the project—and without having exhausted all less-harmful alternatives. Yet we now know that when it constructed the Devils Lake Outlet to discharge highly-polluted water into the Sheyenne River, our government did exactly that: It implemented a very costly project WITHOUT having completed comprehensive studies (including hydrologic studies) to determine the real causes of the rising level of Devils Lake, WITHOUT having determined the damages that would result to the Sheyenne River system and everyone using it, and WITHOUT implementing the most-obvious less-harmful alternative—restoration of artificially drained wetlands in the Devils Lake Upper Basin.

Now we know that the 358,000 acres of upper-basin wetlands that have been artificially drained into Devils Lake once had the capacity to store over 623,000 acre-feet of water in periods of high precipitation (such as 2009), which is 6 percent MORE than the entire, record 587,000 acre-feet of inflows during last year's spring flood.

Now we know that if the sulfate standard for the Upper Sheyenne River is, in fact, raised to 750 mg/L in order to support increasing Devils Lake discharges from 100 cfs to 250 cfs, the beautiful Sheyenne River will be essentially trashed. Fish and mussel species will be lost. Downstream flooding will be exacerbated. Spawning and nursery habitat will be lost. Water treatment costs for downstream municipalities will increase. Bank erosion will worsen. Large trees along the river will die. All because Devils Lake's highly-polluted water contains twice as much phosphorous, nitrate, and arsenic as are found in the Sheyenne—and 10 times the chloride and 4 times as much sulfate.

Now we know that the $28 million outlet does NOT work as its promoters claimed it would, and that the State knew it could not work as claimed even before they built it. As a matter of fact, by 2008, the outlet had removed only one-tenth of an inch of water from the lake (at an annual operating cost of over a quarter of a million dollars), and by 2009 the lake was 10 inches higher than it was before the outlet began operation.

Enough is enough. We urge that there be absolutely no increase in the volume of water discharged through the Devils Lake Outlet, and no increase in allowable levels of contaminants in any part of the Sheyenne River. Instead, we urge that out-of-State, objective experts be commissioned to complete a thorough, scientific study of all the real causes of the rising lake level; and of all the potential downstream effects/impacts of discharging Devils Lake water into the Sheyenne River—so that we can proceed rationally, truthfully and responsibly to manage the issue of the rising level of water in Devils Lake.

Thank you for your consideration.

PREPARED STATEMENT OF MARY ANN SHEETS-HANSON, DIRECTOR, ASANTE NETWORK

Dear subcommittee members: As a citizen of Valley City, North Dakota, living next to the Sheyenne River, I have a request. "Before any additional Devils Lake water is discharged through the Lake outlet, I request that independent, outside experts complete a comprehensive, scientific study of both the root causes of rising lake level and all the impacts of Outlet water on the Sheyenne River. This study should include an expert hydrologic assessment of the entire Devils Lake and Sheyenne River areas, and the LIDAR flight study which has been authorized and appropriated by Senate Energy and Water Appropriations Subcommittee. This must be carried out by out-of-State professionals who are *free of the political pressures that dominate North Dakota water issues!* Why the study?

—*The Outlet is Ineffective*.—North Dakota has spent millions on an outlet and wants to spend millions more to add another set of pumps. From 2005–2008, pumping at 100 cfs, this outlet removed only a bit over *0.1 INCH* from the lake. By 2009 the lake was *10 INCHES HIGHER* than it was before the outlet began operation.

—*Greater Pollution*.—Devils Lake water, is much more polluted than water in the Sheyenne, contains two times the amount phosphorous, nitrate and arsenic as in the Sheyenne—along with 10 times the chloride and 4 times as much sulfate. Why pollute a healthy river?

—Valley City's drinking water source is the Sheyenne River! Devils Lake's drinking water source is not Devils Lake. Why not?

There are other reasons to conduct this study. I'm certain you have that list.

Is it possible that the problem with the rise in Devils Lake could have a solution that's been missed because of a "not seeing the forest for the trees" syndrome?

I recently went to the city of Devils Lake Web site to find out where that city gets its water. I learned it's from underground wells and that the city has recently spent millions to lay new pipe to transport that water. Idea: instead of spending billions of additional assets in money, time and energy with no good solution, consider spending those same assets to build two or more super reverse osmosis plants in Devils Lake. Stop using precious underground water to supply that city with drinking water. Use the water from Devils Lake for that city's and the surrounding community's drinking water.

DRINK THE DEVILS LAKE—LAKE LEVEL DOWN!

Thank you for your consideration of this testimony.

PREPARED STATEMENT OF THE PETERSON COULEE OUTLET ASSOCIATION

Thank you for the opportunity to submit outside witness testimony to the Senate Committee on Appropriations; Subcommittee on Energy and Water Development; the subcommittee's February 19 field hearing in West Fargo, North Dakota, on the potential negative impacts on the downstream environment and human communities from the suggested increased release of polluted waters from the Temporary Emergency Devils Lake Outlet.

First let us again, clarify that the lake of Devils Lake is not flooding, it is filling. The lake of Devils Lake has not reached its Natural Overflow Spill Elevation (NOSE). Until the lake of Devils Lake reaches it's NOSE it is not proper to proclaim that the lake is flooding.

In the January 29, 2010, a news article announcing the February 19, 2010, Senate Committee on Energy and Water Development's field hearing on the potential impacts on the downstream aquatic environment and human communities from the suggested increased release of polluted waters from the Temporary Emergency Devils Lake Outlet, Subcommittee Chairman Senator Byron Dorgan of North Dakota was quoted as saying: "We have made all kinds of efforts . . . to help provide the

funding necessary to mitigate the damages of flooding at Devils Lake. But I have always insisted, I am not interested in transferring the problem from one region of our State to another." (Daum, 2010)

However this is exactly what the Temporary Emergency Devils Lake Outlet has been doing, with absolutely no benefits, what-so-ever, to the lake bed "landowners" adjacent to the present shores of Devils Lake.

At this time, as we understand the situation, the Senate Subcommittee on Energy and Water Development's only concern with the suggested, increased flows from the Temporary Emergency Devils Lake Outlet is whether or not to appropriate a portion of the ever dwindling, very limited Federal money for the upgrade of only two of the downstream North Dakota cities', which use the Sheyenne River as a municipal water source, water treatment facilities. It is estimated that these water treatment facility upgrades that will cost the United States Federal Taxpayers approximately $60 million. Sixty million dollars the United States Federal Taxpayers can ill afford in these financially troubling times, (with absolutely no tangible benefits to the United States Federal Taxpayers from the expenditure of their monies).

The only solution a reasonably thinking person could logically conceive would be for the anticipated downstream North Dakota cities' water treatment facility dilemma, is to immediately order the discontinuation of discharges of the polluted Devils Lake waters from the Temporary Emergency Devils Lake Outlet.

The Temporary Emergency Devils Lake Outlet is indeed, without any reasonable doubt, transferring one community's manmade problem to many other downstream communities, including the ongoing, unwanted, bulk biota transfers along with the sulfates and other pollutants.

When one's bath tub is filling and may overflow, one does not drill a hole in the side of the tub and in the floor to drain the potential overflow water onto the people living beneath them, one simply turns off the faucet. The Devils Lake Upper Basin storage program now in place, to prevent unwanted inflows into the lake of Devils Lake (turning off the faucet, so to speak) is a joke! At the present time and since the year 2000, the Devils Lake Upper Basin, Extended Storage Acreage Program (ESAP) has only been able to enroll 395 acres of land, capable of storing a potential total of 769 acre-feet of water. Preventing 769 acre-feet from entering a lake that already contains approximately 3,375,692 acre-feet, at the present elevation of approximately 1,450 means sea level (msl) (see attachment), is an insult and a joke. That joke is being played on the United States Federal Taxpayers. The State of North Dakota (one of the only States in the United States of America, that is not awash in Red Ink, during these financially troubling times) seemingly refuses to use its own money for this Temporary Emergency Devils lake dilemma.

In fact it appears to any reasonably thinking person, that the State of North Dakota has been deliberately exacerbating the Devils Lake dilemma for the sole purpose of using the manmade Temporary Emergency as an economic development project to bring in United States Federal Taxpayers dollars to the State, by discontinuing the Available Storage Acreage Program (ASAP). The Executive Summary of the 2006, Devils Lake Basin Water Management Plan, page 3, third paragraph, states;

"The Water Commission enacted ASAP (Available Storage Acreage Program) in 1996. This program paid landowners to store water that would have contributed to the flooding around Devils Lake. The program ran from 1996–1999 and stored 8,000–22,000 acre-feet per year at a total cost of $3.5 million. In 2000, the ASAP evolved into the Extended Storage Acreage program (ESAP), which involved extended (typically 10-year, rather than 1-year) contracts. Under ESAP, the Water Commission signed contracts for 8 sites in 2,000 which covered 395 acres, and had an approximate storage volume of 800 acre-feet. Those contracts are scheduled to expire on December 31, 2008. In 2003, an additional ESAP contract was signed for 18 acres, with 35 acre-feet of storage. That contract will also run through December 31, 2008."

As far as we know, all (all eight, only eight) of the ESAP contracts that had expired on December 31, 2008, have all been renewed for another 10 years. If the State of North Dakota deemed it prudent, necessary and had the where-with-all to pay for and store 8,000–22,000 acre-feet from entering the lake of Devils Lake, from 1996 through 1999, the State of North Dakota must now have other undisclosed reasons for not continuing the ASAP program, especially now when the State of North Dakota is awash in Oil Tax Revenue money!

The United States of America is, has been and will continue to be, facing an imminent Health Care Crisis, meanwhile the North Dakota State Water Commission used the majority of North Dakota's share of the Tobacco Lawsuit Settlement money

to finance, build, operate and maintain the Temporary Emergency Devils Lake Outlet as a solution to a North Dakota manmade disaster.

Now the State of North Dakota, through its effected downstream cities, is asking for even more United States Federal Taxpayers dollars to continue this manmade disaster, economic development project.

We pray that you the members of the Senate Committee on Appropriations, Subcommittee on Energy and Water Development do not allow this fiscal irresponsibility be continued.

ATTACHMENTS

PETERSON COULEE OUTLET ASSOCIATION,
Maddock, ND, February 26, 2010.

Mr. DENNIS FEWLESS,
Director, Division of Water Quality, Environmental Health Section, North Dakota Department of Health, Gold Seal Center, 918 E. Divide Ave. Bismarck, North Dakota 58501–1947.

DEAR SIR: Thank you for the opportunity to provide comments to the North Dakota Department of Health's (ND DoH) Triennial Review of the Standards of Quality for Water of the State as Required by 33 U.S.C. 1313(c).

The ND DoH's Web site's home page public notice of the announcement of the (ND DoH) Triennial Review of the Standards of Quality for Water of the State as Required by 33 U.S.C. 1313(c) appears to be deliberately misleading by only emphasizing and discussing the effects of the "intent to amend administrative rules relating to standards of water quality" for the proposed Sheyenne River segment reclassification in order to accommodate the discharging of even more polluted Devils Lake waters, for a longer period of time into an out of basin location, to a point source in the Sheyenne River. However that is not our understanding of the purpose of a Triennial Review. The ND DoH's statutory and fiduciary responsibilities to maintain and improve the quality of waters of the State of North Dakota as required by 33 U.S.C. 1313(c), as we understand a Triennial Review, are to include all of the ND DoH's handling of water quality issues in the State of North Dakota for the last three (3) years.

The North Dakota Department of Health has a seemingly, long, unimpressive history of upholding the Standards of Quality for Water of the State as Required by 33 U.S.C. 1313(c).

Examples of this unimpressive history are numerous, only a few will be cited in these comments, at this time.

An example of the failure of the ND DoH's statutory and fiduciary responsibilities to maintain and improve the quality of waters of the State of North Dakota as required by 33 U.S.C. 1313(c), is the ever changing, site specific, study standards of groundwater aquifers for the needed ND DoH's permit approval of private or public projects, such as the Grand Forks Landfill and the many Confined Animal Feeding Operations' (CAFOs, Animal Factories) sewage ponds scattered around the State. The study standards appear to be tailored to meet the very lowest, if even that, of the newly lowered acceptable limit of each of the individual projects' required needs for permit approval.

Another example(s) of the abysmal failure of the ND DoH's statutory and fiduciary responsibilities to maintain and improve the quality of waters of the State of North Dakota as required by 33 U.S.C. 1313(c), is the lack of substantive, regular inspections of facilities, infrastructures and procedures that are capable of producing irrevocable harm to the Quality for Waters of the State of North Dakota are the two oil well, salt water spills into the Charbonneau Creek, a tributary of the Yellowstone River. "(David) Glatt said the company did not report the August 2005 spill, and regulators learned of it only while investigating the spill that occurred more than a year later." Quote taken from the Associated Press—Monday, October 27, 2008, article titled "Federal lawsuit filed in huge saltwater spill". Enclosed.

The lack of awareness by the ND DoH of the aforementioned incident(s) does not appear to be an isolated incident. Again, another example; "But the department's water quality director, Dennis Fewless, said he hadn't even heard about the practice until asked about it this week by The Associated Press." . . . "Transportation engineer Brad Darr said the saltwater has been used on State roads in the Dickinson area of southwestern North Dakota since the late 1960s, and the practice has expanded to some other parts of the State in the past decade." For approximately 40 plus years, the ND DoH's statutory and fiduciary responsibilities to maintain and improve the quality of waters of the State of North Dakota as required by 33 U.S.C. 1313(c) has been seriously compromised by the ND DoH's (willful?) lack of awareness due to the ND DoH's lack of substantive, regular inspections of facilities, infra-

structures and procedures that are capable of producing irrevocable harm to the Quality for Waters of the State of North Dakota. Quotes taken from the Associated Press—Saturday, February 03, 2007, article titled "ND State de-ices highways with oil well saltwater". Enclosed.

With the ongoing and anticipated long lasting oil boom in North Dakota's Bakken Shale Formation, the Three Forks-Sanish Formation and a crude-bearing cache known as the Birdbear, and with the ND DoH's history of the lack of awareness, the ND DoH's lack of substantive, regular inspections of facilities, infrastructures and procedures, are the North Dakota citizens really expected to entrust the ND DoH to inspect, regulate, and enforce generally accepted industrial standards & procedures for oil well produced water, produced water transportation, storage and disposal, the regulation of coal ash ponds, etc., for another 3 years without an on-going program of intensive over-sight of the ND DoH's activities in regulating water quality in the navigable waters of the United States within North Dakota? The oil boom is so intense that there is now talk by the oil industry, in their rush to exploit all possible oil bearing formations, of their intentions of constructing offshore oil drilling and pumping platforms in the middle of Lake Sakakawea?, under the bed of the Missouri River. With the potential to allow and permit such activities the ND DoH risks that pollutants, such as drilling mud, petroleum products, the BTEX chemicals and other pollutants may be released, whether intentionally or accidentally, into the Waters of the State of North Dakota, the Waters of the United States causing irrevocable harm to the Quality of the Waters.

Since none of our, Peterson Coulee Outlet Association (PCOA), previous concerns dealing with the Temporary Emergency Devils Lake Outlet (TEDLO, Outlet) have ever been substantively addressed, we would like to submit those concerns at this time. A great number of these concerns have been published in the form of Letters to the Editor(s) in the local county newspapers of record and are therefore, a matter of public record which can be found in the local county newspaper of records' archives; the ND DoH must consider those previous Letters to the Editor(s), PCOA's oral testimony at the February 17, 2010, ND DoH's Bismarck, North Dakota, hearing and PCOA's written submitted comments of November 4, 2009, along with the new concerns outlined in this document when considering the desirability of the ND DoH's Intent to Amend Administrative Rules Relating to Standards of Water Quality in a Segment of the Sheyenne River.

By the ND DoH's approval of the Amending of Administrative Rules to change the Classification of a Segment of the Sheyenne River, for the sole purpose of allowing the uninterrupted, continual discharge of polluted Devils Lake water into the Sheyenne River, the ND DoH is also approving the construction of a permanent Round Lake intake structure and is therefore, willfully attempting to change the North Dakota legislative policy and intent of a Temporary (not intermittent) Emergency Devils Lake Outlet.

Page 3 and 4 of the of the 52 page ND DoH's "Notice Of Intent To Amend Administrative Rules Relating To Standards Of Water Quality" states in part:

North Dakota Administrative Code 33–16–02.1(2)(a), specifies that: "The 'quality of waters' (of the State) shall be the quality of record at the time the first standards were established in 1967, or later if these indicate improved quality. Waters with existing quality that is higher than established standards will be maintained at the higher standard unless affirmatively demonstrated, after full satisfaction of the intergovernmental coordination and public participation provisions of the continuing process, that a change is necessary to accommodate important social or economic development *in the area which the waters are located.* In allowing the lowering of existing quality, the (North Dakota Department of Health) shall assure that existing uses are fully protected and that the highest statutory and regulatory requirements for all point sources and cost-effective and reasonable best management practices for nonpoint sources are achieved." [Emphasis Added]

In February of 2006, the Peterson Coulee Outlet Association asked the United States Army Corps if the closed basin of Devils Lake was now considered connected to the Red River/Sheyenne River system because of the operation and discharge flows from the Temporary Emergency Devils Lake Outlet. The United States Army Corps response letter is attached and states in part, "When Devils Lake is below elevation 1,459, Devils Lake is considered 'non-contributing' and, therefore, not hydrologically connected to the Sheyenne or Red River basins". And will not be considered "contributing" to the Sheyenne or Red river basins, until the lake of Devils Lake naturally overflows the elevation of 1,459 msl., therefore, it is the PCOA's contention that the ND DoH can not legally change the Sheyenne River classification, because the closed basin of Devils Lake is not in "in the area which the waters are located" which are the waters that will be degraded by the proposed Sheyenne River reclassification.

Due to the diminutive size and the minute discharges from the Temporary Emergency Devils Lake Outlet, the Outlet is too small to ever be considered any real relief to the Devils Lake lakebed's inundated acres. With the lake of Devils Lake at a present level, of approximately 1,450 msl, with a prediction of an additional two (2) foot rise this spring and the Temporary Emergency Devils Lake Outlet, discharging at 100 cubic feet per second (cfs) or even at a discharge rate of 250 cfs, the Outlet will not have any substantive effect on lowering a lake with a volume of approximately 3,375,692 acre feet (at the 1,450 msl elevation) or even substantially slowing the rate of rise of a lake that has had averaged inflows into the lake of Devils Lake of 317,000 acre-feet per year from 1993 to 2000 (U.S. Army Corps of Engineers, 2002). The Temporary Emergency Devils Lake Outlet is more symbolic than significant. The Temporary Emergency Devils Lake Outlet's Application to Drain, No. 3457 and the ND DoH's Intention to Amend Administrative Rules Relating to Standards of Water Quality for a Segment of the Sheyenne River may be some sort of a psychological relief but it is not any real relief to the inundated lake bed acres. A psychological relief is not a legally, defensible reason that accommodates important social or economic development in the area, for the granting of a permit for the Application to Drain, No. 3457 or for the ND DoH's Intention to Amend Administrative Rules Relating to Standards of Water Quality for a Segment of the Sheyenne River.

At the present time, Devils Lake's current elevation of approximately 1,450 means sea level (msl), has a vast number of acres above the numerous various meanderline elevations, yet below the Ordinary High Water Mark and are owned in fee simple, by private individuals and by the deliberate actions by man, to cause the draining of Sovereign Lands, by the granting of a permit for the Application to Drain, No. 3457 and the ND DoH's Intention to Amend Administrative Rules Relating to Standards of Water Quality for a Segment of the Sheyenne River, it would be considered the willful conversion of the Sovereign Lands to private ownership in the judicial system. Sovereign Lands are lands held in perpetual trust for the benefit of all the citizens of the State of North Dakota, the conversion of Sovereign Lands for the sole benefit of a select few private individuals' economic enjoyment is in itself an illegal act. Only through acts of nature, such as evaporation, could the lake bed acres perhaps, perhaps legally revert back to those select few private individuals.

The laws of North Dakota are quite clear;

North Dakota Administrative Code, Article 89–10, Sovereign Lands, chapter 89–10–01, section 89–10–01–02. Prohibition on permanent relinquishment. Sovereign lands may not be permanently relinquished but must be held in perpetual trust for the benefit of the citizens of the State of North Dakota. All structures permitted or otherwise allowed for private use on sovereign lands are subordinate to public use and values.

and;

North Dakota Century Code 61–33–01, Definitions, No. 3, "Sovereign Lands" means those areas, including beds and islands, laying within the ordinary high watermark of navigable lakes and streams.

The ND DoH's "Intent to Amend Administrative Rules Relating to Standards of Water Quality" for the proposed Sheyenne River segment reclassification is not; Legally Defensible, Economically Defensible, Morally Defensible or, Environmentally Defensible!

For all of the afore mentioned cases cited above and because North Dakota Department of Health officials have failed miserably to act in a professional, truthful and responsible manner to meet their statutory and fiduciary responsibilities to maintain and improve the quality of the water of waters of the State of North Dakota as required by 33 U.S.C. 1313(c), and have instead decided to compromise their professional integrity, the ND DoH clearly lacks the credibility and the competence to regulate the administering, inspecting and enforcing the Standards of Quality for Waters of the State. Therefore, the Administrator of the United States Environmental Protection Agency should immediately implement a comprehensive review of all of the department's actions under the Federal Clean Water Act and establish an on-going program of intensive over-sight of the department's activities in regulating water quality in the navigable waters of the United States within North Dakota.

We will leave you with this one parting comment to ponder, taken from the Final Biennial Report for 1911–1912, North Dakota State Engineer to the Governor, which states in part:

"The water level of any lake possessing no outlet depends on the amount of evaporation, seepage, rainfall and runoff into the Lake from the drainage area tributary

to it. The drainage area of Devils Lake is nearly 2,000 square miles, but the land lies so nearly level, and there are so many marshes, meadows, small ponds and lakes which arrest the flow of the water and *from which it evaporates* that it is not likely that the runoff from more than 700 or 800 square miles of the total area ever reaches the lake." [Emphasis Added]

The PCOA would also humbly request that our comments and enclosures be included in any submissions that the ND DoH makes to the Untied States Environmental Protection Agency in connection with the Triennial Review of the Standards of Quality for Waters of the State of North Dakota under 33 U.S.C. 1313(c).

Sincerely,

MRS. THELMA PAULSON,
President.

[From the Associated Press, Monday, October 27, 2008]

FEDERAL LAWSUIT FILED IN HUGE SALTWATER SPILL

A rancher is suing an Oklahoma oil company over a pipeline that twice spilled saltwater into a creek and on land where she runs her cattle in northwestern North Dakota.

Linda Monson, of Alexander, said nothing but weeds have grown where Zenergy, Inc., of Tulsa, Oklahoma, spilled salty water.

"There's nothing growing where they had those spills, and my cows still refuse to drink from the creek," she said.

Monson was one of about a dozen ranchers affected by the saltwater spill near Alexander that was discovered in January 2006. The spill has been described as the worst in North Dakota's oil history.

The saltwater, a byproduct of oil production, flooded a stock pond and a beaver dam, and flowed into Charbonneau Creek, a tributary of the Yellowstone River.

Monson said a similar spill occurred in August 2005 that never was reported to authorities.

Saltwater from the pipeline, containing water 10 times as salty as sea water, killed fish, turtles and plants along the creek after both spills, she said.

Monson's Federal lawsuit seeks at least $75,000 from Zenergy.

Company officials did not return telephone calls on Monday seeking comment.

State officials last year reached a $123,000 settlement with Zenergy, said Dave Glatt, the director of the State Health Department's environmental health section.

A fine of $31,750 was suspended "for following through on their corrective action plan," Glatt said.

Glatt said the company did not report the August 2005 spill, and regulators learned of it only while investigating the spill that occurred more than a year later.

Zenergy is continuing with the cleanup, which has cost the company more than $2 million so far, Glatt said.

The company has excavated tons of contaminated soil from the spill site. It has said the creek is as clean as it was before the spill and has been repopulated with turtles and fish.

"That's my understanding, and leads us to believe the cleanup is headed in the right direction," Glatt said.

Monson and her attorney, Derrick Braaten of Bismarck, are not convinced. They worry about the long-term effect of the spills."One of the main concerns is that there is still saltwater underground and it's not static—it can move," Braaten said.

Monson and Braaten also said the company's cleanup operation has worsened the flow of water into the creek."They've cut off the main water veins that feed the creek," Monson said."A fairly large chunk of the creek is dried up now," Braaten said.

The creek had never been dry before the spills, Monson said.

Zenergy has offered a total of about $7,000 to Monson to settle the issue, though she has declined, Braaten said. "I haven't taken anything from them," Monson said.

The company has one oil well on Monson's land. She says the horizontal well is aimed at government land adjacent to her property and says she receives no royalties from the well's production.

Zenergy has drilled a new water well on Monson's ranch so she can water her cattle without the creek. She says it's not enough."I just want some fairness," she said.

[From the Associated Press, Saturday, February 3, 2007]

NORTH DAKOTA—STATE DE-ICES HIGHWAYS WITH OIL WELL SALTWATER

For about 40 years, State workers have dumped saltwater left over from oil production on some North Dakota roads, including those in the Devils Lake area. That's news to the Health Department, which wants the practice stopped.

The Transportation Department claims oil well wastewater up to 10 times saltier than sea water is a safe, effective and cheap deicer.

Environmentalists are stunned that workers have dumped tens of thousands of gallons of the potentially contaminated stuff on roads every year, causing unknown harm to wetlands, streams and water supplies.

SIERRA CLUB VIEW

"I can't imagine anybody would sign off on this," said Wayde Schafer, a North Dakota spokesman for the Sierra Club.

"When it leaves the well site and is in an oil company truck, it's considered toxic material," he said. "If they have just one drip from the truck, they're fined. But when it's transferred to a State truck, it's spread wholesale along the interstate. It definitely makes one wonder."

HEALTH DEPARTMENT VIEW

Transportation spokeswoman Peggy Anderson said the State Health Department had approved the use of the salty wastewater for deicing. But the department's water quality director, Dennis Fewless, said he hadn't even heard about the practice until asked about it this week by The Associated Press.

"In our opinion, we did not give them our blessing on this practice," Fewless said Friday.

Fewless said the wastewater pulled from oil wells may contain oil and chemicals from drilling operations. "The bottom line is, we need to look to the future and look for better options and phase this process out," Fewless said.

NORTH DAKOTA DOT'S VIEW

Transportation Department officials say they have not seen any ill effects caused by the saltwater, such as dead vegetation along highways or rustier-than-normal vehicles.

Transportation engineer Brad Darr said the saltwater has been used on State roads in the Dickinson area of southwestern North Dakota since the late 1960s, and the practice has expanded to some other parts of the State in the past decade.

SALTWATER IS FREE

Darr said the Transportation Department had no exact figure, but uses "tens of thousands of gallons" of the saltwater each year, at no charge from the oil companies who otherwise would have to pay someone to haul it off. "They can have all they want," said Dave Wanner, a manager at Missouri Basin Well Service in Belfield, North Dakota.

Darr said the use of the oil field wastewater has been expanded in the past decade to State roads in Williston, Minot and Devils Lake.

Larry Gangl, the district engineer for the Transportation Department in Dickinson, said about 30 gallons of the undiluted saltwater is applied each mile to slick highways. Sometimes, it is mixed with sand, he said. "It cuts through the ice and helps sand stick to the ice," Gangl said.

Gangl said the salty water has been applied in just the past couple of years before a predicted storm. That led to a few complaints, he said, but he believes it helps keep roads safe. "We're doing it for the safety of the traveling public," Gangl said. "Once they hear that, they are pretty fine with it."

Schafer, of the Sierra Club, said his group has found no other States that use oil well saltwater for deicing.

MONTANA DOT'S VIEW

Charity Watt Levis, a spokeswoman for the Montana Department of Transportation, said the State does not use the salt brine from oil wells. "It is something that we looked at not something that we've really studied closely but on the surface, it looks as though the heavy metals that might be in there wouldn't meet the Montana Department of Transportation specifications," she said.

Wanner, a manager at Missouri Basin Well Service in Belfield, North Dakota said the saltwater may contain traces of oil residue with a "little tiny film to it," but that it is not dangerous to the environment if applied sparingly. "It's not that nasty at all. You don't see dead grass along the highways out here," Wanner said. "They don't put it on that heavy."

PETERSON COULEE OUTLET ASSOCIATION,
Maddock, North Dakota, February 22, 2010.

Mr. JIM HERDA,
Office Manager, 524 4th Avenue North East, Unit #12, Devils Lake, North Dakota 58301–2490.

DEAR SIR: Thank you for the opportunity to provide comments to the Application to Drain, No. 3457.

Since none of our, Peterson Coulee Outlet Association (PCOA), previous concerns dealing with the Temporary Emergency Devils Lake Outlet have ever been substantively addressed, we would like to resubmit those concerns at this time. A great number of these concerns have been published in the form of letters to the Editor(s) in the local county newspapers of record and are therefore, a matter of public record which can be found in the local county newspaper of records' archives; you must consider those previous Letters to the Editor(s) along with the new concerns outlined in this document when considering the desirability of approving the Application to Drain, No. 3457.

Clearly, the Governor of North Dakota, in conjunction with the North Dakota State Water Commission, is attempting to shift the liability for any and all damages caused by the Temporary Emergency Devils Lake Outlet to the Joint Ramsey-Towner County Water Resource Board. The Governor of North Dakota has the legal power, granted to him by the people of North Dakota, to proclaim an Executive Order, for the greater good of the all the citizens of North Dakota and proceed with this drainage scheme, Application to Drain, No. 3457, without the need for the solicitation and involvement of any local County Water Resource Board(s). Are the individual board members of the Joint Ramsey-Towner County Water Resource Board willing to accept their fiduciary responsibilities associated with the potential liabilities of the Application to Drain, No. 3457?

By the granting of a permit for the Application to Drain, No. 3457, the Joint Ramsey-Towner County Water Resource Board is also approving the construction of a permanent Round Lake intake structure and is therefore, willfully attempting to change the North Dakota legislative policy and intent of a Temporary (not intermittent) Emergency Devils Lake Outlet. The PCOA has not been able to find, anywhere, the Joint Ramsey-Towner County Water Resource Board's legally required reclamation plan for the Temporary Emergency Devils Lake Outlet real properties, after the emergency has passed.

The Joint Ramsey-Towner County Water Resource Board is premature in considering the Application to Drain, No. 3457, until all of the other necessary components (that is permits, reclassifications, etc., which are needed for the workability of the application to Drain, No. 3457), have been obtained, such as the interconnection permit, from the Western Area Power Administration (WAPA, along with WAPA's Federally required cost/benefit for the entire drainage scheme), needed for the additional electricity to power the pumps for the proposed increase in the drainage discharge flows, the North Dakota Department of Health's (ND DoH) permanent reclassification standards for the Sheyenne River, the application is incomplete without the obtaining of all of the required downstream flowage easements by the petitioners for the approval of the Application to Drain, No. 3457, to name just a few.

North Dakota Administrative Code 33–16–02.1(2)(a), specifies that: "The 'quality of waters' (of the State) shall be the quality of record at the time the first standards were established in 1967, or later if these indicate improved quality. Waters with existing quality that is higher than established standards will be maintained at the higher standard unless affirmatively demonstrated, after full satisfaction of the intergovernmental coordination and public participation provisions of the continuing process, that a change is necessary to accommodate important social or economic development *in the area which the waters are located.* In allowing the lowering of existing quality, the (North Dakota Department of Health) shall assure that existing uses are fully protected and that the highest statutory and regulatory requirements for all point sources and cost-effective and reasonable best management practices for nonpoint sources are achieved." [Emphasis Added]

In February of 2006, the Peterson Coulee Outlet Association asked the United States Army Corps if the closed basin of Devils Lake was now considered connected

to the Red River/Sheyenne River system because of the operation and discharge flows from the Temporary Emergency Devils Lake Outlet. The United States Army Corps response letter is enclosed and states in part, "When Devils Lake is below elevation 1,459, Devils Lake is considered 'non-contributing' and, therefore, not hydrologically connected to the Sheyenne or Red River basins". And will not be considered "contributing" to the Sheyenne or Red river basins, until the lake of Devils Lake naturally overflows the elevation of 1,459 msl., therefore, it is the PCOA's contention that the ND DoH can not legally change the Sheyenne River classification, because the closed basin of Devils Lake is not in "in the area which the waters are located" which are the waters that will be degraded by the proposed Sheyenne River reclassification.

The Application to Drain, No. 3457, forum is incomplete. Question number nine of the application forum reads;

(9) Do you own the land to be drained in fee? __ YES X NO

If NO, give the name and address of the legal landowner(s):

And the partial answer was;

Majority of the land is sovereign land held in trust by the State of North Dakota A "Majority of the land" . . . is not all of the land, the other names and addresses of the legal landowner(s) have not been provided with the Application to Drain, No. 3457. Until such time when the other names and addresses of all of the legal landowner(s) have been provided, the Joint Ramsey-Towner County Water Resource Board can not legally grant a permit for the Application to Drain, No. 3457.

At the present time, Devils Lake's current elevation of approximately 1,450 means sea level (msl), has a vast number of acres above the various meanderline elevations and are owned in fee, by private individuals, by the deliberate actions by man, to cause the draining of Sovereign Lands, by the granting of a permit for the Application to Drain, No. 3457, it would be considered the willful destruction of the Sovereign Lands, in the judicial system. Sovereign Lands are lands held in perpetual trust for the benefit of the citizens of the State of North Dakota, the destruction of Sovereign Lands for the sole benefit of a select few private individuals' economic enjoyment is in it-self an illegal act. Only through acts of nature, such as evaporation, could the lake bed acres perhaps, perhaps legally revert back to those select few private individuals. The laws of North Dakota are quite clear;

North Dakota Administrative Code, Article 89–10, Sovereign Lands, chapter 89–10–01, section 89–10–01–02. Prohibition on permanent relinquishment. Sovereign lands may not be permanently relinquished but must be held in perpetual trust for the benefit of the citizens of the State of North Dakota. All structures permitted or otherwise allowed for private use on sovereign lands are subordinate to public use and values.

and;

North Dakota Century Code 61–33–01, Definitions, No. 3, "Sovereign Lands" means those areas, including beds and islands, laying within the ordinary high watermark of navigable lakes and streams.

Since the Temporary Emergency Devils Lake Outlet has been operating and discharging the drained waters from the large wetland, that is referred to by the name of Devils Lake, (whether the Temporary Emergency Devils Lake Outlet has been effective at draining and maintaining the lake at a set elevation or not) the Untied States Department of Agriculture (USDA) through its subordinate agencies, the Farm Service Agency (FSA) and the Natural Resources Conservation Service (NRCS) will consider any drained, inundated croplands recovered, to be unpermitted, drained, converted wetlands and unless those drained, converted wetlands are properly mitigated with an equal number of restored wetland acres, within the same hydrological area, a landowner, farmer, operator will not be able to harvest agricultural commodities from those drained, converted wetlands. To do so would put the landowner, farmer, operator out of compliance with the USDA's subordinate agencies' regulations. The potential consequence of such compliance violations, the landowner, farmer, operator will lose all of their USDA, FSA, NRCS Federal agricultural subsidies for the year in which the violation occurred, all future subsidy payments will be withheld until the violation has been corrected or mitigated and the mandatory repayment of all agricultural subsidies received for the previous 10 years from/for the USDA's FSA, NRCS Federal agricultural subsidy programs, if the landowner, farmer, operator had so chosen to enroll in the USDA's FSA, NRCS Federal agricultural subsidy programs. The Joint Ramsey-Towner

County Water Resource Board will be putting their constituents at a great risk of harm by granting the permit for the Application to Drain, No. 3457.

Due to the diminutive size and the minute discharges from the Temporary Emergency Devils Lake Outlet, the Outlet is too small to ever be considered any real relief to the Devils Lake lakebed's inundated acres. With the lake of Devils Lake at a present level, of approximately 1,450 msl, and the Temporary Emergency Devils Lake Outlet discharging at 100 cubic feet per second (cfs) or even at a discharge rate of 250 cfs, the Outlet will not have any substantive effect on lowering a lake with a volume of approximately 3,375,692 acre feet (at the 1,450 msl elevation) or even substantially slowing the rate of rise of a lake with averaged inflows to the lake of Devils Lake of 317,000 acre-feet per year from 1993 to 2000 (U.S. Army Corps of Engineers, 2002). The Temporary Emergency Devils Lake Outlet is more symbolic than significant. The Temporary Emergency Devils Lake Outlet's Application to Drain, No. 3457 may be some sort of a psychological relief but is not a real relief to the inundated lake bed acres. A psychological relief is not a legally, defensible reason that accommodates important social or economic development in the area for granting a permit for the Application to Drain, No. 3457.

As of today's date, the PCOA has not found anywhere a social/economic report of the potential costs/impacts/benefits of the proposed Application to Drain, No. 3457.

As of today's date, the PCOA has found no evidence of any attempt by Joint Ramsey-Towner County Water Resource Board to obtain the required downstream flowage easements for the Application to Drain, No. 3457.

As of today's date, the PCOA is aware of less than 10 general public comments indicating the desire for the approval of Application to Drain, No. 3457. This lack of general public support in favor of approval for the Application to Drain, No. 3457, indicates an overwhelming desire by the public to not grant the permit for the Application to Drain, No. 3457.

The Application to Drain, No. 3457, is not; Legally Defensible, Economically Defensible, Morally Defensible or, Environmentally Defensible!

For all of the above reasons the Peterson Coulee Outlet Association opposes the approval and granting of the permit associated with the Application to Drain, No. 3457.

We will leave you with this one parting comment to ponder, taken from the Final Biennial Report for 1911–1912, North Dakota State Engineer to the Governor, which states in part:

"The water level of any lake possessing no outlet depends on the amount of evaporation, seepage, rainfall and runoff into the lake from the drainage area tributary to it. The drainage area of Devils Lake is nearly 2,000 square miles, but the land lies so nearly level, and there are so many marshes, meadows, small ponds and lakes which arrest the flow of the water and *from which it evaporates* that it is not likely that the runoff from more than 700 or 800 square miles of the total area ever reaches the lake." [Emphasis Added]

Sincerely,

MRS. THELMA PAULSON,
President.

PETERSON COULEE OUTLET ASSOCIATION,
Maddock, North Dakota, February 12, 2010.

Mr. DIRK SHULUND,
P.O. Box 35800, Billings, Montana 59107–5800.

DEAR MR. SHULUND: We are aware that the North Dakota State Water Commission (ND SWC) is required to obtain and has requested, an interconnection permit for the electricity that will travel through the newly constructed electrical transmission line to power the additional electrical motors needed to increase the discharge of Devils Lake waters through the Temporary Emergency Devils Lake Outlet (TEDLO) project.

—What is the status of the requested ND SWC's TEDLO interconnection permit?

—If the requested ND SWC's TEDLO interconnection permit has been granted what is the cost/impact/benefit ratio for the ND SWC's TEDLO associated with the granted interconnection permit?

—What is the estimated additional newly created "carbon foot print" associated with the granting of the ND SWC's TEDLO interconnection permit?

—What is the estimated increase of the cost of electricity to the other consumers of electricity in the region, because of the increased demand for the limited

available, existing electrical capacity in North Dakota, associated with the granting of the ND SWC's TEDLO interconnection permit?

—What provisions by the Western Area Power Administration (WAPA) are in place or are being proposed by WAPA, for achieving compliance with the requirement of the National Environmental Policy Act (NEPA), section 102 (C), for an Environmental Impact Statement (EIS) covering the issuance of the interconnection permit?

Sincerely,

MRS. THELMA PAULSON,
President.

PETERSON COULEE OUTLET ASSOCIATION,
Maddock, North Dakota, November 4, 2009.

L. DAVID GLATT,
P.E., Chief, Environmental Health Section, North Dakota Department of Health, Gold Seal Center, 918 E. Divide Ave. Bismarck, North Dakota 58501–1947.

DEAR SIR: Thank you for the opportunity to address a few of the numerous concerns from the citizens of North Dakota in the form of comments to the North Dakota Department of Health's, July 15, 2009, Proposal to Adopt an Emergency Rule adding a New Section to North Dakota Administrative Code Chapter 33–16–02.1, Standards of Quality for Waters of the State to Change the Classification of the Upper Sheyenne River and Increase the Maximum Limit for Sulfate in the River From 450 mg/L to 750 mg/L.

North Dakota State law states: "Sovereign lands may not be permanently relinquished but must be held in trust for the benefit of the citizens of North Dakota". This has not been the case with the lake bed of Devils Lake, located in the State of North Dakota. Since the time of North Dakota statehood, the North Dakota State government has known that the lake of Devils Lake's Ordinary High Water Mark (OHWM) is between 1,458 to 1,459 means sea level (msl), with a Natural Overflow Elevation (NOE) of 1,459 msl. The Lake of Devils Lake's natural tendency is to fluctuate. Devils Lake has not yet reached its OHWM or its NOE. Sometime in the past, during one of the lake's naturally occurring low fluctuations, the North Dakota State government, in all its combined wisdom, deeded, permanently relinquished, the temporarily dried lake bed bottom, Sovereign lands, to private individuals for their personal economic gains. At that time the North Dakota State government had breeched the trust of the citizens of North Dakota by condoning the illegal sale of the People of North Dakota's lands. Now the North Dakota Department of Health (ND DoH), by declaring an Emergency, with an Imminent Peril to life and property on the, privately owned, illegally deeded lake bed, and because of the lake's natural fluctuation, the lake is now filling its previously dry lake bed area, the ND DoH is now an active accomplice to this illegal act of stealing the Sovereign Land's away from the good citizens of North Dakota. If the ND DoH had been unbiased and by actually taking their responsibilities seriously, thereby doing their required due diligence of taking a hard look at the laws of North Dakota, the ND DoH would have known better than to declare an Emergency of Imminent Peril for lands below the OHWM and NOE. This comment is not beyond the scope of the issues regarding the North Dakota Department of Health's, July 15, 2009, Proposal to Adopt an Emergency Rule adding a New Section to North Dakota Administrative Code Chapter 33–16–02.1, Standards of Quality for Waters of the State to Change the Classification of the Upper Sheyenne River and Increase the Maximum Limit for Sulfate in the River from 450 mg/L to 750 mg/L.

The proposed *PERMANENT* Upper Sheyenne River Reclassification by the ND DoH, runs counter intuitive to the clear intent of the North Dakota's 58th Legislative Assembly to construct a *TEMPORARY* Emergency Devils Lake Outlet. The ND DoH is deliberately attempting to circumvent the desires of the North Dakota citizen's legislature by this permanent Upper Sheyenne River Reclassification in order to allow the operation of the Temporary Emergency Devils Lake Outlet to be come in reality a Permanent Emergency Devils Lake Outlet. This comment is not beyond the scope of the issues regarding the North Dakota Department of Health's, July 15, 2009 Proposal to Adopt an Emergency Rule adding a New Section to North Dakota Administrative Code Chapter 33–16–02.1, Standards of Quality for Waters of the State to Change the Classification of the Upper Sheyenne River and Increase the Maximum Limit for Sulfate in the River from 450 mg/L to 750 mg/L.

The ND DoH's proposed, Permanent Upper Sheyenne River Reclassification is seriously lacking statewide support. There has been absolutely no overwhelming North Dakota public out cry demanding a Permanent Upper Sheyenne River Reclas-

sification. None, absolutely none, of the State's major population centers, the cities of Fargo, Grand Forks, Bismarck, Minot, Williston, Dickinson have passed any resolutions in support of, petitioned the North Dakota legislature for, or even sent letters to the Environmental Protection Agency begging, for this degrading Upper Sheyenne River Reclassification, which would permanently allow the pumping greater quantities, of ever lower quality waters, into the Upper Sheyenne River. If the ND DoH would have taken their responsibilities seriously, had taken a hard look and did their required due diligence, the ND DoH would have known better than to suggest that the filling of a lake is an Emergency of Imminent Peril and of State Wide Significance therefore a proposed permanent river reclassification for a temporary emergency would never have been considered. This comment is not beyond the scope of the issues regarding the North Dakota Department of Health's, July 15, 2009, Proposal to Adopt an Emergency Rule adding a New Section to North Dakota Administrative Code Chapter 33–16–02.1, Standards of Quality for Waters of the State to Change the Classification of the Upper Sheyenne River and Increase the Maximum Limit for Sulfate in the River from 450 mg/L to 750 mg/L.

If the ND DoH had seriously taken a hard look, completed their required due diligence, for the citizens of North Dakota, the ND DoH would be aware that they are premature in proposing a Permanent Emergency Upper Sheyenne River Reclassification. The North Dakota State Water Commission (ND SWC) (one, of the only two entities, petitioning for the Permanent Emergency Upper Sheyenne River Reclassification, the other being the city of Devils Lake) has applied for, months ago, but has not yet, at this time, received the approval for an Interconnection Permit from the Western Area Power Administration (WAPA, a Federal Governmental Agency) that is needed for the additional electrical power to operate the four additional Temporary Emergency Devils Lake Outlet discharge pumps in order to increase the outlet's discharge capacity to 250 cubic feet per second (cfs). The granting of an Interconnection Permit from WAPA is highly unlikely. If WAPA grants an Interconnection Permit for the electricity to operate the four additional Temporary Emergency Devils Lake Outlet discharge pumps, the Temporary Emergency Devils Lake Outlet automatically becomes a Federal project. In order for a Federal Governmental Agency to grant a permit for a project, the project must first meet the Federal Government's, mandated, stringent legal, environmental and economical requirements. In order for WAPA to insure that the Public's resources will not be wasted on an uneconomical endeavor, the project must be determined to have a positive cost/benefit ratio. At the last Devils Lake Task Force meeting, October 29, 2009, in the city of Devils Lake North Dakota, an engineer from the ND SWC was asked (and we are paraphrasing here), "That if the Temporary Emergency Devils Lake Outlet could have been discharging at the full 250 cfs for the full operating season this year, how much would the operation of the outlet lowered the lake elevation (assuming that the Permanent Upper Sheyenne River Reclassification was in effect for the whole season)?" He answered hesitantly, and finally said about 4 to 6 inches, depending on the beginning lake level of course and any additional inflows to the lake during the pumping season. A better question to have asked would have been, "How many inches of shore line, from around the whole of the lake (or the combined aggregate of acres, derived from the inches of shoreline recovered), would have been recovered due to the discharges attributed to the Temporary Emergency Devils Lake Outlet?" The question wasn't asked, so there is no official answer, to the question. According to our calculations the answer would be, very few inches of shoreline recovered, less than 5 acres would have been recovered. Not many bushels of agricultural commodities can be raised (at below cost of production, hence the need for agricultural commodity subsidizations) on less than 5 acres of recovered, unproductive, saline lake bed. These factors do not meet the Federal Government's permitting requirements for a positive cost/benefit ratio. It is highly unlikely that WAPA will grant the Interconnection Permit. This comment is not beyond the scope of the issues regarding the North Dakota Department of Health's, July 15, 2009 Proposal to Adopt an Emergency Rule adding a New Section to North Dakota Administrative Code Chapter 33–16–02.1, Standards of Quality for Waters of the State to Change the Classification of the Upper Sheyenne River and Increase the Maximum Limit for Sulfate in the River from 450 mg/L to 750 mg/L.

The ND DoH has not, beyond a reasonable doubt, begun to not even have consider, in a substantive manner, any of the numerous downstream ecological damages to the beneficial uses of, not only the Upper Sheyenne River, but the entire Sheyenne River and Red River, that are being and will continue to be, caused by the degradation of the excessive amounts of nutrient loading in the Rivers by the enactment of the ND DoH's, July 15, 2009, Proposal to Adopt an Emergency Rule adding a New Section to North Dakota Administrative Code Chapter 33–16–02.1, Standards of Quality for Waters of the State to Change the Classification of the

Upper Sheyenne River and Increase the Maximum Limit for Sulfate in the River from 450 mg/L to 750 mg/L. On Tuesday, 10:58 a.m., September 29, 2009, a member of the Peterson Coulee Outlet Association (PCOA) e-mailed a request for information from the ND NoH. After not having received a reply from the ND DoH in a timely manner, the PCOA then sent a written letter to the ND DoH on October 8, 2009 (enclosed). On October 22, 2009, the PCOA received a reply letter from the ND DoH, dated October 20, 2009 (enclosed). The POCA did not believe that the ND DoH's October 20, 2009, was a substantive answer to the PCOA's "Request for Information on the Background studies for the North Dakota Department of Health's July 15, 2009 proposal to Adopt an Emergency Rule . . . ". On October 27, 2009, the PCOA sent yet another letter to the ND DoH informing the ND DoH of such (enclosed). On November 2, 2009, PCOA received a Federal Express Airmail, certified letter (only 4 days before the ND DoH's, July 15, 2009, Proposal to Adopt an Emergency Rule . . . comment deadline date) dated October 30, 2009, from the ND DoH (enclosed). Although the October 30, 2009, letter from the ND DoH, did contain a computer disc of spreadsheets compiled from the, 2005–2009, United States Geological Survey (USGS) and the North Dakota State Water Commission (ND SWC) of the raw data of nutrient loads gathered from the various monitoring gauges along the Sheyenne River, the disc did not contain any interpretations of the data or the estimated increase in the nutrient loads being introduced by the additional flows of the polluted waters from the lake of Devils Lake or the effects of the additional nutrient load will have on the receiving navigable waters, the Sheyenne and Red Rivers. This is not the Due Diligence required by the ND DoH under North Dakota statutes for a July 15, 2009, Proposal to Adopt an Emergency Rule adding a New Section to North Dakota Administrative Code Chapter 33–16–02.1, Standards of Quality for Waters of the State to Change the Classification of the Upper Sheyenne River and Increase the Maximum Limit for Sulfate in the River from 450 mg/L to 750 mg/L. The ND DoH's October 30, 2009, still seems to confuse the PCOA's request for information with North Dakota's Open Records law by stating a public entity is not required "to create or compile a record that does not exist". Be that as it may, the ND DoH did admit that *"At this time, the Department does not have in its possession any records that contain the results of these calculations or that specifically answer PCOA'S questions."* Nor did the ND DoH October 30, 2009 letter offer any general answers to the PCOA's questions either. This is not the Due Diligence required by the ND DoH under North Dakota statutes. The ND DoH has not begun to attempt any, hard look, and begin under taking any substantive studies of the effects on the receiving waters beneficial uses by the introduction of massive amounts of extremely low quality water, that are being caused by their own, North Dakota Department of Health's, July 15, 2009, Proposal to Adopt an Emergency Rule adding a New Section to North Dakota Administrative Code Chapter 33–16–02.1, Standards of Quality for Waters of the State to Change the Classification of the Upper Sheyenne River and Increase the Maximum Limit for Sulfate in the River from 450 mg/L to 750 mg/L. The ND DoH's stead-fast refusal to fulfill, or even acknowledge, its legal responsibility to "maintain or improve, or both, the quality of the waters of the State and to protect existing uses" under NDAC Chapter 33–16–02.1. Clearly, the ND DoH cannot assure that existing uses of the Sheyenne River will be protected unless the impacts of the proposed emergency rule on those existing uses are identified and quantified through the review and analysis of scientific data regarding the resulting changes in water quality in the river. NDAC section 33–16–02. 1–02 2c states explicitly: "Any public or private project or development which constitutes a source of pollution shall provide the best degree of treatment as designated by the ND DoH in the North Dakota pollutant discharge elimination system. (Note that this requirement is under the "Standards of Quality for Waters of the State" and is separate from the regulations in NDAC 33–16–01 governing the North Dakota Pollution Discharge Elimination System permit.) *If review of data and public input* indicates *any* detrimental water quality changes, appropriate actions will be taken by the department following procedures approved by the Environmental Protection Agency. (North Dakota Antidegradation Implementation Procedure, appendix IV.)" (Emphasis added) Clearly, the regulation requires "review of data" to determine whether "detrimental water quality changes" will occur and their severity, and the failure to review that data will result in failure of the ND DoH to discharge its responsibilities under its own regulations to "take appropriate actions following procedures approved by the Environmental Protection Agency." The statement by Mr. Glatt that "the department does not have in its possession any records that contain the results of these calculations" constitutes his admission of the ND DoH's willful failure to perform the review required by NDAC chapter 33–16–02.1. Moreover, by failing to "specifically answer PCOA's questions" about the impacts of the proposed emergency rule on water quality in the Sheyenne River, the

ND DoH is deliberately thwarting the very "public input (regarding) detrimental water quality changes" provided in its own regulations. This comment is not beyond the scope of the issues regarding the North Dakota Department of Health's, July 15, 2009, Proposal to Adopt an Emergency Rule adding a New Section to North Dakota Administrative Code Chapter 33–16–02.1, Standards of Quality for Waters of the State to Change the Classification of the Upper Sheyenne River and Increase the Maximum Limit for Sulfate in the River from 450 mg/L to 750 mg/L.

North Dakota Governor John Hoeven wrote a letter to Secretary of State, the Honorable Condoleezza Rice, dated April 20, 2005, (enclosed) assuring the Secretary of State that all beneficial uses of waters downstream of the Temporary Emergency Devils Lake Outlet will be protected. Paragraph five of that letter reads; "The permit to discharge water from Devils Lake to the Sheyenne River is designed to protect all beneficial uses of the water downstream. It has extensive compliance requirements including establishment of baseline conditions, monitoring, adaptive management and reporting. As part of the adaptive management plan, the permit includes a mechanism for recognizing and rapidly addressing issues that may arise." Although North Dakota Governor Hoeven was at the time speaking about the first ND DoH's discharge permit, there were at least some minor protections to all of the downstream water's beneficial uses. The North Dakota Department of Health's, July 15, 2009, Proposal to Adopt an Emergency Rule adding a New Section to North Dakota Administrative Code Chapter 33–16–02.1, Standards of Quality for Waters of the State to Change the Classification of the Upper Sheyenne River and Increase the Maximum Limit for Sulfate in the River from 450 mg/L to 750 mg/L, willfully and totally disregards Governor Hoeven's previous commitment to the Secretary of State, the citizens of the United States of America, the citizens of North Dakota and Minnesota, the Federal Canadian Government and the Province of Manitoba. This comment is not beyond the scope of the issues regarding the North Dakota Department of Health's, July 15, 2009, Proposal to Adopt an Emergency Rule adding a New Section to North Dakota Administrative Code Chapter 33–16–02.1, Standards of Quality for Waters of the State to Change the Classification of the Upper Sheyenne River and Increase the Maximum Limit for Sulfate in the River from 450 mg/L to 750 mg/L.

The Lake of Devils Lake is filling, according to its own normal natural fluctuation cycle. The North Dakota Department of Health is deliberately, shifting, perpetuating and intensifying the problems of this natural fluctuation cycle of the closed basin lake of Devils Lake, by this ill-conceived, July 15, 2009, Proposal to Adopt an Emergency Rule adding a New Section to North Dakota Administrative Code Chapter 33–16–02.1, Standards of Quality for Waters of the State to Change the Classification of the Upper Sheyenne River and Increase the Maximum Limit for Sulfate in the River from 450 mg/L to 750 mg/L, to the artificially created (by way of the man made, Temporary Emergency Devils Lake Outlet) connection to the downstream Upper Sheyenne River regions. The Temporary Emergency Devils Lake Outlet is not a natural phenomenon; it takes an act of man to throw the switch and turn on the discharge pumps. This comment is not beyond the scope of the issues regarding the North Dakota Department of Health's, July 15, 2009, Proposal to Adopt an Emergency Rule adding a New Section to North Dakota Administrative Code Chapter 33–16–02.1, Standards of Quality for Waters of the State to Change the Classification of the Upper Sheyenne River and Increase the Maximum Limit for Sulfate in the River from 450 mg/L to 750 mg/L.

Hence, the North Dakota Department of Health's, July 15, 2009, Proposal to Adopt an Emergency Rule adding a New Section to North Dakota Administrative Code Chapter 33–16–02.1, Standards of Quality for Waters of the State to Change the Classification of the Upper Sheyenne River and Increase the Maximum Limit for Sulfate in the River from 450 mg/L to 750 mg/L is not; Legally Defensible, Economically Defensible or, Environmentally Defensible!

Sincerely,

THELMA PAULSON,
President.

PETERSON COULEE OUTLET ASSOCIATION,
Maddock, North Dakota, October 8, 2009.

Mr. MIKE ELL,
Environmental Health Section, Surface Water Quality/Lakes/Rivers, North Dakota Department of Health, Gold Seal Center, 918 E. Divide Ave. Bismarck, North Dakota 58501–1947.

DEAR MR. ELL: On Tuesday, 10:58 a.m., September 29, 2009, you were sent the following e-mail from the Peterson Coulee Outlet Association. As of today's date, October 8, 2009, we have not had any type of reply from you, perhaps you did not receive our letter. Hence we feel it necessary to send this written letter, to rectify the uncertainty.

We request substantive answers to our questions within fifteen (15) calendar days from today's date, October 8, 2009.

We realize that no reply or non answers, to these questions are, yet another indication of the North Dakota Department of Health's lack of background studies for the proposed adoption of an Emergency Rule, Adding a New Section to North Dakota Administrative Code Chapter 33–16–02.1, Standards of Quality for Waters of the State, to Change the Classification of the Upper Sheyenne River and will be viewed as such.

Thank you in advance.

Sincerely,

THELMA PAULSON,
President.

FW: Devils Lake Downstream Issues Question. What's Ugly, Smells, Kills Dogs? Blue-Green Algae?
From: Leo Walker (ndleo@hotmail.com)
Sent: Tue 9/29/09 10:58 a.m.
To: mell@nd.gov; thomas.scherer@ndsu.edu; roxanne.m.johnson@ndsu.edu

GOOD MORNING, It was suggested (see the following) that maybe you folks would be able to answer our simple questions in a meaningful manner.

Thank you in advance.

Sincerely,

LEO WALKER,
Peterson Coulee Outlet Association.

From: John.Glover@wdc.usda.gov
To: ndleo@hotmail.com; keith.weston@nd.usda.gov; dennis.reep@nd.usda.gov; Andy.Wingenbach@nd.usda.gov; toni.yow@nd.nacdnet.net; Mike.Collins@nd.usda.gov; Brent.Gustafson@nd.usda.gov
Date: Tue, 29 Sep 2009 11:27:58–0400
Subject: Re: Devils Lake Downstream Issues Question. What's Ugly, Smells, Kills Dogs? Blue-Green Algae

MR. WALKER, In response to your following e-mail message, the Natural Resources Conservation Service does not have the technical background to address questions you have posed.

Some of the questions being asked may very well require detailed literature research or even new scientific study to adequately address the issue. I am recommending you contact North Dakota State University, Water Quality Staff, Thomas Scherer, Associate Professor, Thomas.Scherer@ndsu.edu 701–231–7239 <mailto:Thomas.Scherer@ndsu.edu 701–231–7239> or Roxanne Johnson Roxanne.M.Johnson@ndsu.edu 701–231–8926.

The North Dakota Department of Health would be another source with such expertise, and have the legal statutory authority to address such an issue. Mike Ell, Environmental Administrator, would be an excellent contact for this concern. His number is 701–328–5214.

JOHN GLOVER.

From: Leo Walker <ndleo@hotmail.com>
To: Glover, John—Washington, DC; Weston, Keith—Bismarck, ND; Reep, Dennis—Bismarck, ND; Wingenbach, Andy—Devils Lake, ND; Yow, Toni—Fessenden, ND; Collins, Mike—Jamestown, ND; Gustafson, Brent—Valley City, ND.
Sent: Mon Sep 28 14:54:02 2009.

Subject: Devils Lake Downstream Issues Question. What's Ugly, Smells, Kills Dogs? Blue-Green Algae.

GOOD MORNING, The following article comes to you from the September 27, 2009, Grand Forks Herald. Quotes:

"Blue-green algae are common in waters but not every lake develops serious problems until plentiful "man-induced" nutrients like phosphorous arrive, said Jim Vennie, a Wisconsin Department of Natural Resources expert.". . .

"Some people say they have gotten nauseous and vomited from smelling it," said Ken Schreiber, a Wisconsin Department of Natural Resources water quality specialist.". . .

"John Plaza, president of the Chetek Lakes Protection Association, which represents six lakes in northwest Wisconsin, said farm runoff, lawn fertilizers, septic systems and even ashes from leaves being burned on the shorelines are among factors contributing to the algae problems."

We are attempting to write comments concerning the North Dakota Department of Health's reclassification of the Sheyenne River (North Dakota) in order to increase the discharges from the Temporary Emergency Devils Lake Outlet into the Sheyenne River. October 16, 2009, is the deadline.

Can anyone help us calculate;

—How much phosphorous, phosphates (in mg/L or tons, whichever is more appropriate for illustration purposes) from the West Bay of Devils Lake that Lake Ashtabula can accommodate before the Blue-Green algae takes over and poisons Lake Ashtabula?

—How many years it will take, at the following estimated rate inflows from Devils Lake, before the accumulation of phosphates reaches critical mass in Lake Ashtabula?

—Will the downstream receiving cities' water treatment facilities be able to remove the Blue-Green algae toxins?

When the North Dakota State Water Commission completes it's scheme to increases the Temporary Emergency Devils Lake Outlet pumping capacity from 100 cfs (cubic feet a second) to 250 cfs (approximately 100,000 acre/feet a year), Lake Ashtabula's waters will be replaced over 1½ times a year with Devils Lake water. The volume of Lake Ashtabula is approximately 60,000 acre/feet.

We believe most of the phosphorous, phosphates from Devils Lake will accumulate and remain in Lake Ashtabula and will not be flowing through Baldhill Dam. We believe Lake Ashtabula is, will become more of, a nutrient trap for Devils Lake waters, the cumulative effects on Lake Ashtabula will be devastating and irreversible.

	WEST BAY of DEVILS LAKE (mg/L)	SHEYENNE RIVER (mg/L)
Total Dissolved Solids	1,200–2,000	600–700
Calcium	70–75	50–60
Magnesium	80–85	30–35
Sodium	240–250	75–85
Arsenic	12–15	4–5
Phosphorous	.400	.175–.250
Chloride	125–150	10–20
Hardness	450–550	250–300

There is Mercury, Strontium, Cadmium, Aluminum and others that we don't know about, that need to be considered also.

Thank you in advance.

Best Regards,

LEO WALKER,
Peterson Coulee Outlet Association.

[From the Associated Press, Sunday, September 27, 2009]

WHAT'S UGLY, SMELLS, KILLS DOGS? BLUE-GREEN ALGAE

Waterways across the upper Midwest are increasingly plagued with ugly, smelly and potentially deadly blue-green algae, bloomed by drought and fertilizer runoffs from farm fields, that's killed dozens of dogs and sickened many people.

Aquatic biologists say it's a problem that falls somewhere between a human health concern and a nuisance, but will eventually lead to more human poisoning. State officials are telling people, who live on algae-covered lakes to close their windows, stop taking walks along the picturesque shorelines and keep their dogs from drinking the rank water.

Peggy McAloon, 62, lives on Wisconsin's Tainter Lake and calls the algae blooms the "cockroach on the water." "It is like living in the sewer for 3 weeks. You gag. You cannot go outside," she said. "We have pictures of squirrels that are dead underneath the scum and fish that are dead. . . . It has gotten out of control because of the nutrient loads we as humans are adding to the waters."

Blue-green algae are common in waters but not every lake develops serious problems until plentiful "man-induced" nutrients like phosphorous arrive, said Jim Vennie, a Wisconsin Department of Natural Resources expert. The toxins released by the algae can be deadly. Symptoms include rash, hives, runny nose, irritated eyes and throat irritation.

No people have died in the United States from the algae's toxins, according to Wayne Carmichael, a retired aquatic biologist and toxicology professor in Oregon.

Many, however, have gotten sick: "Sooner or later, we are going to have more acute human poisoning," Carmichael said.

The scum has killed dozens of dogs over the years—including at least four in Oregon, three in Wisconsin and one in Minnesota this summer. Wisconsin wildlife experts are warning duck hunters with dogs to be extra cautious this fall. "If the water is pea-soup green, be sure to have clean water along to wash the dog off," Vennie said. "Don't let it drink the water."

Fewer than 100 lakes in Wisconsin typically have some problems with algae bloom each summer and the ones in western Wisconsin causing so much discomfort this year are being fueled by a perfect storm, Vennie said. The last month has seen little rain, warm, sunshiny days and little wind.

The blooms just sit there, growing, then decaying and smelling. "Some people say they have gotten nauseous and vomited from smelling it," said Ken Schreiber, a Wisconsin Department of Natural Resources water quality specialist.

Officials have banned recreational activities at some lakes in Washington State because of blooms. And in Oregon, the blue-green alga is the No. 1 water quality issue, Carmichael said.

Yet other countries have worse problems, Carmichael said, because many have waters with even more nutrients than exist in U.S. lakes.

In France, a horse died on a beach in July after falling into some decaying algae sludge. Last year, the Chinese Government brought in the army to remove the slimy growths so the Olympic sailing competition could be held.

Stephanie Marquis, a spokesman for the Wisconsin Department of Health Services, said her agency had received 41 complaints related to health concerns with blue-green algae so far this season. Rashes, sore throats and eye irritation among the problems, she said.

In Minnesota, Matt Lindon is a pollution control specialist for the State and he called 2009 a typical year for complaints about algae scums. But for some reason this summer, Bagley Lake in northwest Minnesota, an "historically clean lake," generated respiratory and odor problems, he said. "It may be related to the water level or some new runoff source," he said.

Loren Hake, 71, has lived about two blocks from a Lake Menomin in western Wisconsin since 1963.

He feels like a prisoner in his own home, isolated by a stench "something like a pig pen" that forces he and his wife to run the air conditioner although it's not that hot because they can't leave the windows open, he said. For the first time, the couple hasn't sat on an outside deck because of the smell from the algae-covered bay. "I don't know what they can do about it," Hake said.

There's little anybody can do besides wait for cooler temperatures, Vennie said.

John Plaza, president of the Chetek Lakes Protection Association, which represents six lakes in northwest Wisconsin, said farm runoff, lawn fertilizers, septic systems and even ashes from leaves being burned on the shorelines are among factors contributing to the algae problems. "I have been a user of these lakes since 1962," he said. "I have never experienced anything like this before. It's nasty. People are saying we can't live with this any more."

This photo provided by John Kuglin shows some green algae on Thursday, Sept. 3, 2009, on Lake Pokegama near Chetek, Wisconsin Waterways across the upper Midwest are increasingly plagued with ugly, smelly and potentially deadly blue-green algae, bloomed by drought and fertilizer runoffs from farm fields, that's killed dozens of dogs and sickened many people. (AP Photo/John Kuglin)

ROBERT IMRIE,
Wausau, WI.

PETERSON COULEE OUTLET ASSOCIATION,
Maddock, North Dakota, October 27, 2009.

Mr. DENNIS FEWLESS,
Director, Division of Water Quality, Environmental Health Section, North Dakota Department of Health, Gold Seal Center, 918 E. Divide Ave. Bismarck, North Dakota 58501–1947.

DEAR MR. DENNIS FEWLESS: On October 8, 2009, the Peterson Coulee Outlet Association (PCOA) sent the North Dakota Department of Health (ND DoH) a written request for information. See enclosed.

PCOA has now received a letter in response to our request for information from the ND DoH dated October 20, 2009. (See enclosed)

It appears to PCOA that the ND DoH has mistakenly confused the PCOA's request for information as a comment to the North Dakota Department of Health's, July 15, 2009, Proposal to Adopt an Emergency Rule, Adding a New Section to North Dakota Administrative Code Chapter 33–16–02.1, Standards of Quality for Waters of the State to Change the Classification of the Upper Sheyenne River and Increase the Maximum Limit for Sulfate in the River from 450 mg/L to 750 mg/L. This is not case.

PCOA's request for information is simply that, a request for information. If the ND DoH feels the need to include the public's requests for information in the public record as comments to the North Dakota Department of Health's, July 15, 2009, Proposal to Adopt an Emergency Rule, Adding a New Section to North Dakota Administrative Code Chapter 33–16–02.1, Standards of Quality for Waters of the State to Change the Classification of the Upper Sheyenne River and Increase the Maximum Limit for Sulfate in the River from 450 mg/L to 750 mg/L, the ND DoH may certainly do so.

However, PCOA's October 8, 2009, request for information has not been substantively answered in the ND DoH October 20, 2009, response.

Therefore, by the ND DoH apparent refusal to provide the information to the PCOA, in a timely manner, information that the PCOA had requested well in ad-

vance of the public's comment deadline period, the ND DoH is preventing the PCOA from substantively commenting on a major issue involving the North Dakota Department of Health's, July 15, 2009, Proposal to Adopt an Emergency Rule, Adding a New Section to North Dakota Administrative Code Chapter 33–16–02.1, Standards of Quality for Waters of the State to Change the Classification of the Upper Sheyenne River and Increase the Maximum Limit for Sulfate in the River from 450 mg/L to 750 mg/L.

Hence, it appears that the ND DoH is thereby deliberately subverting and thwarting the public participation process mandated by law.

At this time, POCA, again will make the request for substantive information to answer our questions (to be received well in advance of the public comment deadline), so that we, PCOA, will be able to fully participate and make factual, informed comments in the Public Comment process mandated by law.

Thank you in advance.

Sincerely,

THELMA PAULSON,
President, Peterson Coulee Outlet Association.

NORTH DAKOTA DEPARTMENT OF HEALTH,
ENVIRONMENTAL HEALTH SECTION,
Bismarck, ND, October 20, 2009.

THELMA PAULSON,
President, Peterson Coulee Outlet Association, 3321 54 Ave N.E. Maddock, ND 56348.

DEAR MS. PAULSON: Thank you for your letter dated October 8, 2009 regarding a "Request for Information on Background Studies for the North Dakota Department of Health's July 15, 2009 Proposal to Adopt an Emergency Rule. . . ." which also includes a request for answers to questions sent in an e-mail to me from Mr. Leo Walker dated September 29, 2009. Since this letter and the attached questions are directly related to the Department's proposed actions related to the Devils Lake outlet and proposed changes in our water quality standards for a portion of the Sheyenne River, the Department has determined that it is appropriate to enter this letter and the attached questions into the public record as part of the public comment period regarding this proposed rule change.

For your information the public comment period ends on November 6, 2009. Following the end of the comment period the Department will thoughtfully consider and prepare responses to all of the comments received, including the questions posed in your letter and Mr. Walker's e-mail. In this way, your questions and the Department's response will be part of the public record.

If you have any further questions concerning this matter, please contact Mr. Dennis Fewless, Director, Division of Water Quality, at 701–328–5210.

MICHAEL J. ELL,
Environmental Administrator, Division of Water Quality.

NORTH DAKOTA DEPARTMENT OF HEALTH,
ENVIRONMENTAL HEALTH SECTION,
Bismarck, ND, October 30, 2009.

THELMA PAULSON,
President, Peterson Coulee Outlet Association, 3321 54 Ave. NE, Maddock, ND 58348.

DEAR MS. PAULSON: Thank you for your October 27, 2009 letter informing the Department that it mistakenly confused the Peterson Coulee Outlet Association's (PCOA) September 29, 2009 e-mail and October 6, 2009 letter as "comments" in the Department's ongoing emergency rulemaking for the proposed new section to North Dakota Administrative Code Chapter 33–16–02.1.

Because you said that the PCOA's October 6, 2009 letter, and September 29, 2009 e-mail are not "comments" on the emergency rule, the Department will not treat them as such and will remove them from the written record of comments on the rule. If this is not correct, and you would, in fact, like the Department to treat the PCOA's October 6, 2009 letter and September 29, 2009 e-mail as comments to the rule, please inform the Department by the end of the public comment period, which is close of business on November 6, 2009. Of course, the PCOA may also submit any other written or oral comments on the proposed rule before the end of the comment period.

After reading your most recent letter, it is my understanding that the PCOA is making an open records request. Specifically, PCOA wants the Department to provide answers to the three questions posed in the September 29, 2009 e-mail, which was also sent as an attachment to the October 6, 2009 letter. These questions ask for the results of specific calculations and the impact of those results on Lake Ashtabula and cities along the Sheyenne River.

At this time, the Department does not have in its possession any records that contain the results of these calculations or that specifically answer PCOA's questions. Under North Dakota's open records law, a public entity is not required to create or compile a record that does not exist." NDCC § 44–04–18(4). In the future, as part of its review of comments, the Department may make or acquire records that may relate to PCOA's questions. This will depend upon the nature of the comments received.

The enclosed disk may be of assistance to PCOA in making the calculations needed to answer its questions. The disk contains the data relied on by the Department in proposing the rule, including data on phosphorus concentrations in the Sheyenne River.

L. DAVID GLATT,
Environmental Health Section, North Dakota Department of Health.

DEPARTMENT OF THE ARMY,
ST. PAUL DISTRICT, CORPS OF ENGINEERS,
St. Paul MN, March 16, 2006.

Mrs. THELMA PAULSON,
President, Peterson Coulee Outlet Association, 3321 54th Avenue NE, Maddock, North Dakota 58348.

DEAR MRS. PAULSON: Thank you for your February 15, 2006, letter regarding the relationship between the Devils Lake and Sheyenne River watersheds. The key in assessing hydrologic connections lies with what is considered the natural, functioning system.

When Devils Lake is below elevation 1,459, Devils Lake is considered "non-contributing" and, therefore, not hydrologically connected to the Sheyenne or Red River basins. Drainage areas may include "non-contributing" areas that, under normal conditions, would not contribute directly to surface runoff to the stream. Non-contributing drainage areas can become contributing during large runoff events.

The Devils Lake basin connection to the Red River of the North basin does not happen naturally until Devils Lake reaches an elevation of 1,459 feet above mean sea level. At this point, the surface runoff would naturally flow through Tolna Coulee to the Sheyenne River and, in effect, hydrologically connect to the Red River basin. Devils Lake was above this natural spill elevation at least twice in the past 4,000 years (North Dakota Geological Survey Report of Investigation No. 100, 1997).

The State of North Dakota's outlet from Devils Lake to Peterson Coulee has a pump station that "lifts" water from Devils Lake over the divide to a constructed outlet channel. Without the pump, water from Devils Lake could not flow naturally to the outlet channel.

If you have additional questions, please contact Ms. Bonnie Greenleaf at 651–290–5476.

WILLIAM L. CSAJKO,
Chief, Project Management Branch.

PEPARED STATEMENT OF LEON PYTLIK, VALLEY CITY, ND

DEVILS LAKE DRAINAGE INTO SHEYENNE RIVER, NORTH DAKOTA

Dear subcommittee members: Back in the mid-1960s I worked in Devils Lake. Just south of the railroad trestle, there was a sign very high on a pole that showed the level of Devils Lake at some time in the past.

In the late 1980s and early 1990s they were pleading for more water because Devils Lake was so low. To remedy that situation, they drained several hundred thousand acres of wetlands into Devils Lake. About that time the weather cycled into a normal to slightly above normal moisture pattern, and the lake begin to rise.

Now, several hundreds of millions of dollars have been spent to raise dikes, roads, etc. The only thing that hasn't been tried *is turning off the drains.*

The water in Devils Lake is so bad that the city of Devils Lake doesn't use the water for their drinking water. But, they want to send it down river, where Valley City gets its water from the Sheyenne River.

The Federal guideline for sulfates is 250. The North Dakota Health Department has approved 450 and intends to increase that to 750. This says nothing of other pollutants such as mercury, lead, cadmium, arsenic, chloride, etc. that are also in the Devils Lake water. This is contrary to what the Health Department should be doing.

It is *imperative* that there be an *independent, out-of-state* environmental impact study done on the effects of Devils Lake water on those of us downstream from Devils Lake, as well as farm animals and wildlife. The Sheyenne River has about 50 species of fish. About 11 can survive in Devils Lake. There are 9 mussel species in the Sheyenne, none in Devils Lake. *There has to be a reason!*

I want to thank you for considering this testimony.

PREPARED STATEMENT OF ALICE BEAUCHMAN, VALLEY CITY, ND

Senate Energy and Water Appropriations Subcommittee: As a resident of Valley City I am very concerned with the Devils Lake outlet sending mass quantities of water into the Sheyenne River. I am worried no one has a complete understanding at this point of what this will do to the Sheyenne. I think further study by a nonpartial agency is in order. It would be very sad to adversely affect the Sheyenne River and perhaps Lake Ashtabula to solve problems on Devils Lake. I am a little resentful that with this outlet their problems are shifted downstream. I am also concerned with the quality of the water we will be drinking in Valley City, and the cost to make that water safe.

Please consider doing an out-of-state, nonbiased impact statement to gather more knowledge before decisions are made.

PREPARED STATEMENT OF THE NORTH DAKOTA CHAPTER OF THE WILDLIFE SOCIETY

Dear Senator Dorgan, The North Dakota Chapter of the Wildlife Society shares many of the concerns that were raised by you and others at the February 19 hearing in of the U.S. Senate Energy and Water Development Subcommittee. These concerns include the growing water quality and flooding problems downstream from Devils Lake. We wish to express our strong support for your comment that upper basin storage be included as a key tool to help solve the growing crisis caused by the ongoing flooding at Devils Lake. As you aptly noted at the hearing, Devils Lake is like a full bathtub that is not being contained at the faucet. Historically, the upper basin naturally carried out upper basin water storage, with wetlands and grasslands serving as the catalyst. These intact wetlands held back a major part of the run-off within the watershed. Research has shown that evaporation typically removes 2–3 feet from the water column of wetlands in the northern plains through evaporation; additional water is removed as it percolates downward, recharging aquifers. In this situation of intact wetlands, water storage capacity remains high in virtually all years. Currently, an estimated 101,000–189,000 wetland acres in the Devils Lake Basin have been drained, as cited in a fact sheet by Bob Anfang with the Corps of Engineers in an April 1998 memo to participants at an Upper Basin Management meeting. Major inflows into Devils Lake occur every spring after a significant snow pack, as well as after every major rain event during the spring, summer, and fall. Your work securing funding for LIDAR coverage of the Devils Lake Basin has made it possible to rapidly assess where the best opportunities exist for upper basin water retention expediting steps to relieve the ongoing flooding situation at Devils Lake as soon as possible.

Both Devils Lake and the Sheyenne River are being taxed to their limits. Unless ways are found to control the faucet, the problem will continue to grow in complexity and severity. The Sheyenne River and its biota are a highly valued natural resource that provides much recreation to fishermen, hunters, sightseers, and birders throughout its length in the State. The value of the River is reflected in its designation as a scenic byway along some of its most unique sections.

On a much broader scale, similar water storage efforts are needed in upper parts of watersheds across the entire Red River Basin to help stem the serious flooding problems that now occur almost annually in the Red River Valley. A comprehensive program increasing upper basin storage throughout the Red River Basin can enhance many societal values including not only flood mitigation but also provide water quality improvements, ground water recharge, reduce erosion, carbon sequestration, and provide wildlife habitat while supporting an important recreation and

tourism industry. Such a program needs to be balanced, providing adequate compensation and consideration of needs of upper basin landowners, while at the same time protecting the lives, property, and quality of life of both rural and urban residents living downstream.

We appreciate the opportunity to provide comments to the hearing record and stand ready to assist in any way we can to ensure the highly valuable natural resources threatened by the current flooding situation remain available to present and future generations of North Dakotas.

PREPARED STATEMENT OF ANDRE DELORME, VALLEY CITY, ND

CONCERN ABOUT THE PROPOSED CHANGES IN THE DEVILS LAKE OUTLET PERMIT

I would like to express my concerns to the plans to increase the flow of the Devils Lake outlet as well as increase the allowable limits of sulfates in the river. These decisions have been made with very little preliminary study and are based more on political pressure than on scientific examination of the situation. While there is definitely a problem in the Devils Lake Basin, this solution will have very little effect in the short term and will possibly cause more harm than good. I will limit my testimony to the effect on the river biota. I am an aquatic biologist with considerable experience working on the Sheyenne River.

The Sheyenne River has one of the most diverse populations of organisms in the State of North Dakota. Not only does it have a rich diversity of fish species, it also has numerous types of aquatic macroinvertebrates including the most diverse populations of mussels of any river in the State. There are 7 species of mussels in the upper Sheyenne and up to 10 in the lower Sheyenne. This is two to three times the number seen in other mid-size rivers in North Dakota. Mussels are important as water filters and biodiversity sentinels. I feel that these populations will be threatened to some extent with the increase of Devils Lake water into the Sheyenne via the Devils Lake outlet. I see the increase to 250 cfs for the outlet as having two main effects on the Sheyenne, high water levels and high dissolved solids.

Rivers have a seasonal ebb and flow, they have high flows during the spring and low flows in late summer and early fall. Rivers also have changes in populations as you move downstream. Rivers gradually increase in size and discharge the further downstream, these changes provide differing habitats and lead to different assemblages of organisms. In the case of the Sheyenne, you would not expect the same assemblage of organisms in the river near Warwick as you would find near Kindred, which is located much farther downstream. In the upper Sheyenne flows are usually below 60 cfs in late summer-early fall. By running the outlet at 250 cfs you will be changing the dynamics of the river in the upper Sheyenne. Population assemblages adapted to low flows in the fall will no longer see those low flows. In fact, at 250 cfs you will have flows that are even higher than what is normally seen at Kindred during this time of the year. I feel this change in flow will change the assemblage of organisms over time in the upper Sheyenne River. If you take this stress on the environment due to erosion and scouring and couple it with increased dissolved solids, the cumulative effects could be devastating.

All aquatic organisms can be susceptible to high dissolved solids. They place a metabolic load on ion transport systems and can interfere with reproduction. It is up for debate as to what levels of dissolved solids, and sulfates in particular, are toxic to aquatic organisms. The currently proposed new standard for sulfates is well under the known acute toxicity for most organisms to sulfate. However, acute toxicity addresses the short term affect of these levels on an organism, basically it addresses the question of "does this directly kill the organism". A more difficult question is what are the chronic toxicities for aquatic organisms? Since this is a long term proposal, organisms are going to be exposed to these for long periods of time. Unfortunately there is not a lot of data for sulfates on that question. I have been told there is a rough 10 percent rule, that you will see chronic effects at 10 percent of the acute toxicity levels. This would indeed put the chronic toxicity levels in the realm of 750 mg/L for many aquatic organisms. There should be a wide range of chronic toxicity tests done on desirable species such as mayfly larvae, caddisfly larvae, and mussel species before we can truly say what is a safe, chronic level for sulfates. To my knowledge those studies have not been done.

PREPARED STATEMENT OF WILLIAM MOORE, ROGERS, ND

DEVILS LAKE OUTLET AND UPPER BASIN STORAGE RESULTING IN HARM TO SHEYENNE RIVER

Due to the lack of accurate data on the impacts of the operation of the Devils Lake and the minimal effect on reducing the rise of the lake and the outlet should not be operated. At the least if it is not shut down it should only be operated under the conditions of the original permit.

This is not an emergency and the rising level of the lake is not justification for adversely impacting the Sheyenne River. The North Dakota State Health Department is mandated to act in the public interest to protect, maintain, and improve the quality of the waters in the State (NDCC 61–28–01).

Increasing the outlet flows will seriously degrade the Sheyenne River. In North Dakota, water management (mismanagement) has historically been to pass water problems (quantity-quality) on to others. This is not acceptable.

Before considering increasing the output of the outlet beyond the current permit standards, much more accurate data is needed. At this time sulfate levels have been the main consideration in the permitting and operation of the outlet.

The State health department and State water commission have acted more as political entities rather than objective scientific bodies basing decisions on accurate data. For this reason a thorough, accurate EIS conducted by independent out-of-state experts is needed. This position is supported by the Barnes County Health Board, the Barnes County Commission, and more than 700 concerned citizens in a very brief petition drive.

Some of the areas where accurate information is needed are:

—Impacts of water quality in Lake Ashtabula and the Sheyenne River (sulfates, phosphates, mercury, arsenic, chlorides, and others)
  —U.S. Fish Hatchery at Valley City
  —Water treatment costs for Valley City and Fargo
  —Biota
  —Recreation
—Impacts of Increased flows (Quantity and Timing)
  —Summer Flooding
  —Biota
  —Bank Erosion
  —Sedimentation
—Serious consideration of upper basin water management and storage
—Management of the outlet and Baldhill Dam: Will it be the Corps of Engineers or the State Water Commission
—The allowable level of sulfates in Lake Ashtabula
—The amount of water that would be removed from Devils Lake
—The cost and effectiveness of armoring the Tolna Coulee

Thank you for this opportunity to provide testimony.

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